An Investigation into the Effects of M&As on Firms' Operating Performance and Employment in the U.K.

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.....to the memory of my mother, Eleni.

ABSTRACT

This study examines the post-acquisition operating performance and the employment effects of 79 takeovers that took place in the U.K. within the period from January 1990 until December 1996. The aims of the research are (1) to investigate whether M&As, on average, are followed by an increase in post-takeover operating performance, (2) to examine the operating performance of merging firms that share certain common characteristics, (3) to examine whether the stock market can forecast the post-merger changes in operating performance in the period of the event announcement, (4) to investigate what is the impact of M&As on merging firms' employment rates and costs.

The findings suggest that merging firms experience a decline in their post-acquisition operating performance, regardless of whether the effects of pre-acquisition performance on post-merger performance are controlled for or not. However, Strategic acquisitions and related acquisitions exhibit a post-takeover performance improvement. Hostile acquisitions are followed by a performance decline and whether the acquirer paid a relatively high premium for the acquiree or not has no significant effect on post-merger performance. Large acquisitions perform better than all other acquisitions, especially when the target and the bidder operate in the same industry. Performance was adjusted using both industry-median firms and pairs of matched firms on the basis of industry relatedness, pre-acquisition performance and size for each target and bidder. These results are not sensitive to the benchmark used to adjust operating performance. Acquisitions financed solely by cash underperform those financed solely by stock or by a combination of stock and cash.

We find a positive and statistically significant relationship between the operating cash flow returns on assets in the post-takeover years and the combined cumulative market-adjusted returns on assets at the time of the event announcement, after controlling for the effects of pre-merger performance on post-merger performance. However, we identify a degree of optimism on behalf of the stock market agents in the period of the event announcement.

There is no significant evidence that employee costs per thousand pounds of sales decline in the three years following the acquisition completion. Merging firms employ as many employees per thousand pounds of sales as their industry peers in the pre-merger period, whereas employment rates fall below industry's norms in the post-takeover period. Nonetheless, no statistically significant change was identified in the median number of employees per thousand pounds of sales between the post- and the pre-merger periods. Finally, our evidence suggests that hostile acquisitions are followed by job losses and by an increase in costs per employee, while related acquisitions are followed by a decrease in costs per employee without a decrease in the number of employees.

The findings of the research imply that shareholders are more benefited from acquisitions where synergies are more likely to occur. The finding that, on average, post-takeover performance declines is consistent with a view that competition in the market for corporate control in the U.K. is strong and that there are not many opportunities for a large number of profitable takeovers. However, this decline may imply that managers have non profit-maximising objectives, when taking acquisition decisions, in a market for corporate control where competition is weak. Alternatively, in a market for corporate control where competition is weak, managers may take acquisition decisions with the expectation to increase profits, but fail to do so. Which of these interpretations better explain managerial objectives needs further investigation. Finally, the findings may bear some interesting implications for government policy with regard to which acquisitions create value and contribute to the social benefit and which acquisitions serve the aims of employment policy.

I declare that this thesis has been composed by myself with the work my own and that this work has not been submitted for any other degree or professional qualification.

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CHAPTER 1.

INTRODUCTION

1.1. Introduction.

One of the most controversial subjects in the field of Industrial Organisation is that of the takeover activity. This is not surprising, given the large amount of money and resources that are devoted each year to the accomplishment of firm consolidation and the far from consensus that prevails among scholars regarding the value of such decisions. In the U.K., between 2000 and 2005[1], 3577 domestic acquisitions have been recorded with a total value of £236 billion. In that respect, Mergers and Acquisitions represent major corporate investment decisions; for many companies the largest investments of capital they are likely to consider.

Common sense suggests that, rationally thinking management teams would be engaged in merger activity only if the result is beneficial for both participating firms; or, when the bidding management team is convinced that it can manage the target's resources more efficiently than the current management team. However, reality is more complex than it appears. A rich body of literature suggests that M&As on average are beneficial for the participating companies and that the aggregate outcome is positive for them, while at the same time, there is plenty of empirical evidence indicating that M&As destroy value and the participants fail to realize the promised economic gains. On these grounds it is unsurprising that the desirability of M&As is considered as a conundrum.

1.2. Context and Value of this Work.

This study examines the post-merger corporate operating performance of a sample of 79 acquisitions between public companies in the U.K. which were

[1] Apart from domestic acquisitions which are defined as transactions made by U.K. companies, 1055 transactions made by overseas companies and 2103 overseas transactions made by U.K. companies with a value of £195 and £321 billion respectively have been observed in the U.K., for the same period. Source: Office for National Statistics.

completed in the period from the 1st of January 1990 until the 31st of December 1996[2]. The effects of these transactions on engaging firms' employment rates and employee costs in the years subsequent to merger completion are also examined. Finally, we also examine the ability of the stock market to forecast post-takeover changes in operating performance at the time of the event announcement.

Our research and analysis is focused on the economic effects of M&As on the individual interests of two sets of stakeholders; the owners of the firm and the employees (including managers). This is not to say that the consequences of M&As on other groups of stakeholders like customers, suppliers, creditors, competitors, taxpayers, and local society are of minor importance. However, our research is concentrated on the private interests of these two sets of stakeholders since they are the ones that are directly affected from M&A activity.

We examine the economic effects of M&As by measuring the actual economic benefits that are generated by the combined firms' assets in the post-merger years by using an operating cash flow return on assets metric. We believe that an investigation of merging firms' real economic performance in the post-merger years is an additional measure of performance of M&As to the numerous existing share price performance studies. Typically, firms justify their acquisition strategy by referring to increased revenues, cash flows, and profits through the enhancement of a competitive advantage and the reduction of costs. Therefore, an estimation of the actual impact of the acquisition on firm's performance should be made by a direct examination of these accounting variables rather than by exclusively relying on the perception of the stock market agents about the deal. Moreover, share prices may reflect the impact of other factors than firm's expected performance. Such factors could be market swings, fads, and euphoria. After all, advancements in the field of behavioural finance have posed challenges to the assumption that stock markets are always efficient (see for example R. Thaler (1993) and A. Shleifer (2000)). However, we also test the ability of the stock market to forecast changes in post-merger corporate operating performance. We examine the relation between the abnormal asset returns of the combined target and bidder at the time of the event announcement and the operating cash flow return on assets in the post-merger years.

[2] In late 1990's and early 00's stock markets experienced significant fluctuations. We avoid including this period so as to ensure that our results are free from time-specif factors.

We use two alternative performance benchmarks to evaluate asset productivity. The first is the Industry Operating Performance where the target's and bidder's combined performance is measured against the median operating performance of the industries within which they operate. We chose this analysis so as to draw inferences about the combined firm's productivity before and after the merger, having isolated the impact of events which are unrelated to the merger and may be caused by industry-wide or economy-wide factors. This approach provides the first set of empirical results.

However, there is a debate in the existing literature as to whether this kind of benchmarking provides unbiased results about merger productivity. This is because bidders tend to be relatively large firms which outperform their industry firms in the period before the decision of an acquisition. Therefore, we match each combined firm with a pair of firms which operate within the same industry with that of the target and the bidder, have similar operating performance in the pre-merger period, and similar size with them. This approach provides the second set of empirical results.

In this study we also examine the effects of M&As on the other group of stakeholders which are affected most after the shareholders; namely, the employees. Research in this field is not very rich, especially in the U.K. We believe that the measurement of the effects of M&As on the employment of merging firms should include both a metric for the number of employees as well as a metric for the employee costs. Inferences about post-merger labour efficiencies are more appropriate when considering employment rates in relation to the associated costs. This examination provides the third set of empirical results.

Our research differs from that of previous U.K. studies in several important ways. First, unlike other studies where cases were deleted when Datastream values were missing it employs an updated comprehensive sample constructed with the use of two databases. We completed the missing data from Datastream by consulting accounts from Companies House. In addition, our sample companies are purified from acquisition events that otherwise would have contaminated our results. In the entire time period under examination no sample company was engaged in another significant acquisition. This restriction decreased the number of acquisitions that

were included in our sample; however, this was considered necessary for the results to reflect only the changes in operating performance that are attributable to the acquisition in question and not operating cash flows of other recently acquired companies.

Second, this study uses a more recent dataset than any other study for the U.K. and so is able to distinguish the effects of mergers between the periods 1990 - 1993 and 1994 - 1996.

Third, no previous study in the U.K. has examined the operating performance of Strategic takeovers. Evidence from the U.S. suggests that Strategic acquisitions exhibit significant operating performance improvements in contrast to Financial takeovers, and to takeovers on average that just break even (Healy, 1997). Our study investigates the effects on corporate operating performance of Strategic acquisitions.

Fourth, this study investigates the effects on operating performance of acquisitions where the acquirer paid a relatively high premium for the acquiree and of acquisitions where the acquiree was purchased at a discount. The operating performance behaviour of such acquistions has not been examined in previous studies for the U.K.

Fifth, we test the stock market's ability to forecast future changes in operating cash flow by using both the methodologies provided by Healy (1992) and Ghosh (2001). None of the previous studies on the post-merger operating performance for the U.K. employs both methods for this purpose[3].

Finally, we examine the effects of M&As on merging firms' employment rates and employee costs in the U.K. Very few previous studies have examined the impact of M&As on this important group of stakeholders. Our study uses a different methodology than that used by previous studies on the subject.

A clarification for the usage of the terms '*merger*' and '*acquisition*' is considered useful at this point. In this thesis, we use the terms interchangeably since by both terms we mean the combination of two commercial enterprises into a unified enterprise under a single management. The consolidated accounts of the acquirer are used for obtaining data in the post-merger years. Therefore, it is indifferent whether

[3] Manson et. al (1994) and Manson et.al. (2000) employ a methodology which is similar to that used by Ghosh (2001) for the U.S. Powel and Stark (2005) follow Healy's (1992) approach to test stock market's ability to forecast future changes in operating performance.

the acquiree is legally absorbed by the acquirer or it stands as an independent legal unit. The case of 'pure' mergers where the acquirer and the acquiree are dissolved and constitute a new singe enterprise after the completion of the transaction is very rare in the U.K. In fact, no such transaction was identified in our sample.

Our findings suggest that merging firms, on average, experience a decline in their post-acquisition operating performance, regardless of whether the effects of pre-acquisition performance on post-merger performance are controlled for or not. However, Strategic acquisitions and related acquisitions create synergies which are reflected in an observed improvement of their post-takeover performance. Hostile acquisitions underperform friendly ones, and whether an acquisition closed at relatively high premium or not has no significant effect on post-merger performance. Large acquisitions perform better than all other acquisitions especially when the target and the bidder operate in the same industry. Performance was adjusted using both industry-median firms and pairs of firms, matched on the basis of industry relatedness, pre-acquisition performance, and size, for each target and bidder. These results are not sensitive to the benchmark used to adjust operating performance. We also found evidence that acquisitions that were financed solely by cash underperform those that were financed solely by stock or by a combination of stock and cash.

A positive and statistically significant relationship was found between the combined cumulative market-adjusted returns on assets at the time of the event announcement and the post-merger operating cash flow returns on assets once the effects of pre-merger performance on post-merger performance are controlled for. However, we identified a degree of optimism on behalf of the stock market agents in the period of the event announcement.

Merging firms employ as many employees per thousand pounds of sales as their industry peers in the pre-merger period, whereas employment rates fall below industry's norms in the post-takeover period. Nonetheless, no statistically significant change was identified in the median number of employees per thousand pounds of sales between the post- and the pre-merger periods. There is no significant evidence that employee costs per sales decline in the three years following the acquisition completion. However, costs per employee appear to decline following acquisitions that were financed either by cash or stock. Hostile acquisitions are followed by a

decline in the number of employees which is not accompanied by a decline in employee costs. Acquisitions that closed at a premium are followed by an increase in employment costs while employment rates do not change. Finally, some evidence was found that large acquisitions lead to an increase in employee costs, while employment rates remain the same as in the pre-merger period.

A number of implications for shareholders, managers, and the government arise from our study. The average performance decline of merging firms implies that there is not a large number of opportunities for performance improvements after the merger, and this is consistent with a view that the U.K. market for corporate control is competitive. However, this decline is also consistent with an interpretation that managers are not pursuing profit-maximising acquisitions in a corporate environment where competition in the market for corporate control is weak. Alternatively, the negative average post-takeover performance of merging firms may imply that competition in the market for corporate control is weak and managers are pursuing profit maximising acquisitions - as they expect to increase profits - but fail to do so, either because of poor planning or because of unexpected events.

On the other hand, shareholders are benefited from Strategic mergers, mergers between firms with overlapping business operations, mergers where the means of payment involves stock, and friendly transactions. Therefore, it is to the interest of investors to examine the aims and the goals of management before the approval of an acquisition decision. Acquisitions without a strategic orientation to exploit economies of scale after friendly negotiations and with a prior aim to improve targets' efficiency by replacing the incumbent management, seem to lead to lower productivity of assets, while debt-financed acquisitions exhibit performance deterioration in the years following the transaction.

Our research suggests that mergers are not followed by a reduction in labour costs, while there is some evidence that merging firms employ fewer employees than the control firms in the post-merger period[4]. Moreover, hostile acquisitions are followed by job losses and by increased costs per employee, while related acquisitions are followed by a decrease in costs per employee without a decrease in the number of employees.

[4] However, this evidence cannot be generalised to the whole population of mergers and it refers to our sample.

These findings may bear some implications for government policy. This is mostly visible if the interests of different UK regulatory authorities are considered. To begin with, the Competition Commission[5] - whose interests focus on the assessment of mergers and markets in the UK to accommodate public interest and social welfare – can allow mergers when they increase productivity and efficiency in terms of cash flows and in terms of employment[6]. Evidence that the present study provides on these matters can potentially serve as indications for future regulatory directions. Second, the interests of the UK Financial Services Authority (FSA) are of relevance to the results of this study, with regard to the Regulator's objective to promote *efficient, orderly and fair markets* (FSA Annual Report 2005/06). The results of this study indicate that mergers which have a strategic orientation improve productivity of assets and cash flows in the three or five years following the acquisition. When the acquirer and the acquiree operate in the same industry there is a substantial improvement in cash flow returns and this is more obvious when the acquisition is large. According to our study, cash acquisitions – which are typically financed by debt – lead to performance deterioration. Our evidence support the idea that regulatory authorities should stimulate strategic mergers and mergers where the participating parties operate within the same industry and where the method of payment involves stock. Examining labour efficiency both in terms of the number of employees and in terms of employment costs, our study indicates that mergers, on average, do not lead to substantial improvements. However, related acquisitions and stock acquisitions should be encouraged since they both exhibit an improvement in labour costs without a decline in the number of employees in contrast to hostile ones which are followed by a decline in the number of employees but with an increase in labour costs.

In the next Section, a description of the structure of the thesis is provided. Issues related to employment

[5] The Competition Commission was established by the Competition Act 1998 and replaced the Monopolies and Mergers Commission in 1999. The Commission conducts inquiries into mergers, markets and the regulation of the major regulated industries. Every inquiry is undertaken in response to a reference made to it by another authority, usually by the Office of Fair Trading (OFT) (www.competition-commission.org.uk,)

[6] See Competition Act 1998 and Enterprise Act 2002.

1.3. Chapter Outline.

This thesis consists of ten Chapters. In Chapter 2 we discuss the alternative theories which analyse the driving forces for M&A activity. There is a very rich literature on this issue, since academic research has focused on the motives behind takeover decisions due to the increase in both the number of such decisions and the amount of resources devoted in each subsequent merger wave. Typically, the examination of the motives for M&As is based on conclusions that are drawn after investigating their consequences on shareholders' wealth, firm's performance, and the post-merger position of the united firm in the industry.

The existing literature on the effects of M&As on firm's profitability is discussed in Chapter 3. We evaluate the alternative approaches and methodologies that have been used in various previous studies. Particular emphasis is given to the evaluation of the effectiveness of various types of methodologies to clarify whether M&As create value and to the limitations of each methodology. In the second part of Chapter 3 the research questions of this study are presented, and in Chapter 4, we explain the methodology that was adopted for addressing our research questions, given the conclusions drawn from the discussion on the available methodologies and their limitations. Chapter 5 deals with the criteria for the selection of our sample firms and with the process for our sample construction. Chapters 6 and 7 provide a detailed description of our results on the operating performance of merged firms after applying two alternative methods for measuring performance and two different benchmarks for evaluating it. In Chapter 8 we present our results concerning the effects of M&As on the number of employees and on the employment costs of the united entity. Finally, in Chapter 9 we analyse our findings from chapters 6, 7, and 8 in terms of the research questions. Chapter 10 concludes.

CHAPTER 2.

THE DRIVING FORCES FOR MERGER ACTIVITY.

2.1. Introduction.

Much research has been carried out in the past four decades to examine what are the driving forces for M&A activity. The relevant literature has traditionally drawn on synergy, private information, growth, agency, and market power as motives for M&As. In this Chapter the main theories on motives for M&As are reviewed and the relevant empirical evidence is discussed and analysed. The structure of this Chapter is as follows. In the next Section the literature on motives for M&As is discussed. The Section is divided into eight sub-sections, each one referring to a different motive explaining M&A activity. First, financial, operational and managerial synergies as motives for mergers are discussed. Second, information asymmetry for the value of a target, between the acquiring firm's management and other parties is considered and analysed as a driving force for acquistions. The underlying assumption in these two parts of Section 2 is that the acquiring management expects to increase value through the acquisition. Third, we discuss the basis and the implications of the 'hubris' hypothesis which, although - in strict terms - it is not considered a reason for acquistions; it provides an explanation of acquiring management purchasing behaviour. In the fourth and fifth sub-sections, firm's growth and agency problems are discussed as motives for takeovers respectively. Here, the underlying assumption is that managerial objectives and shareholders' interests are likely to divert, especially in firms where there is a complete separation of ownership and control. In the sixth sub-section Gort's Economic Disturbance Theory is considered as an explanation of the variation of the number of takeovers in different time periods. The increase in market power is discussed as a motive for mergers in the seventh part of Section 2, and finally, the desire of acquiring firm's management to increase earnings per share, by means of PE ratio manipulation, choosing the appropriate target for this purpose, is discussed. This Chapter closes with a concluding third Section.

2.2. The Different Dimensions of M&As.

A merger between an acquiring firm, A, and an acquired firm, B, takes place if it is considered that the two entities are placed in a stronger competitive position – and thus, they are worth more together than apart.

According to Brealey and Myers (1996), if the present values of firms 'A' and 'B', as perceived by shareholders, are PV_A and PV_B respectively, and if the present value of the combined entity is considered to be PV_{AB}, then the transaction comes to effect only if:

$$\textbf{Gain}=PV_{AB} - (PV_A + PV_B) > 0. \qquad (1)$$

Plausibly, the prospective gain from the merger must be greater than the cost that is incured by the acquirer. This cost is the premium the acquiring firm pays to the owners of the acquired firm over its value as a separate entity.

Apparently, a gain from a merger is expected by management teams, engaged in the activity, due to their perception of the existence of a value gap. Crook (1995) explains that a valuation gap may result from differences in information or differences in the appraisal of information between the management of the acquirer and the acquiree and the market. However, the decision for an acquisition is often taken even when the acquiring company's management possesses the same information and appraises it in the same manner as other management teams and as the market does. In this latter case, the acquirer expects that the two companies together will be more efficient and will compete more effectively than they would do otherwise. In other words, a target may worth more to a potential acquirer than it is worth as an independent company.

It is important to note at this point that, in a perfectly competitive capital market value gaps would not occur and there would be no acquisitions. As Crook (op.cit.) points out, in such a market, all potential buyers and sellers have the same objectives, the same expectations concerning future profits, the same degree of risk

aversion and the same time horizon for each potential investment. However, according to the author, these particular assumptions do not describe the real world.

2.2.1. Synergy as a Motivating Factor for Acquisitions.

While each takeover is implemented under conditions uniquely attributable to the specific acquirer and acquiree and their contemporary external environment, the expectations for the creation of a competitive advantage or the enhancement of an existing one after the merger, so that net economic gains are to be realized, can be recapitulated in the Literature under the title '*synergy*'. When there is not any kind of information asymmetry, management teams engaging in takeover activity may expect that the combined entity after the merger will be worth more than the two separate units through the realization of the expected synergistic[1] gains. Trautwein (1990), outlines three forms of synergy; financial synergies, operational synergies and managerial synergies.

a) Financial synergies

Financial synergies can benefit merging firms that operate in unrelated business through the creation of a portfolio of production activities where some products with high market share and exhausted growth opportunities, and some other products with low market share and very promising growth opportunities, ensure stable cash flows through time, so as the mother firm can finance its activities[2]. Therefore, the establishment of financial synergies is often the reasoning behind the acquisition of a company that operates in unrelated business on behalf of managers seeking to lower the systematic risk of their company's investment portfolio.

Financial synergies, may also be derived from the creation of internal capital markets. Internal financing is considered to lower the financing costs since the firm's

[1] The word '*synergy*' is derived from the Greek word '*synergeia*' that means 'doing something together'.
[2] This strategy of the creation of a portfolio of production activities underlies the Boston Consulting Group Growth/Share matrix. Profits from high yield products (the 'cash cows'), can subsidise other ones with high growth opportunities to increase their market share (the 'Rising Stars') or the 'Problematic Children' until they both become 'Cash Cows' in the next investment cycle.

headquarters can transfer money from units with an excess of cash to units in need, avoiding the time consuming procedures required for external financing and - more importantly – without high transaction costs and the monitoring requirements that are imposed from external financiers. Having available superior information undisclosed to external parties, management can, therefore, allocate capital more efficiently.

Another source of financial synergies can result from the increase of firm size. Big and/or diversified firms are considered to be exposed to lower risk of default. Since an acquisition increases the firm size it also increases its debt capacity. Grinblatt (1998) suggests that, since diversification reduces the risk of bankruptcy for any given level of debt, it can increase the amount of debt in the firm's optimal capital structure, which in turn can lower the firm's cost of capital. In addition, the transaction costs for issuing debt may be lower than the sum of the costs that would be incurred by the two firms before their merger. It is also possible that after an acquisition, the united entity will have cost advantages in issuing new stock or other securities. Depending on the economic environment also, larger firms may enjoy larger tax savings to their debt.

The realization of financial synergies after the takeover, however, is not unquestionable. Besanko et.al. (2000) argue that unless a firm is big enough to possess an autonomous financial institution, it is more likely than not, to be unable to effectively compete with other financial institutions in implementing its internal financing functions. The financial functions in such a corporation are a 'by-product' of its core business, and as a result, external banks and other financial institutions with more focus and expertise in financing activities may serve the needs of the firm in more favourable terms[3].

The argument regarding diversification of production activities to reduce risk is also open to the criticism that if the shareholders of a firm wish to diversify in different businesses, then this could be accomplished by the shareholders themselves, by purchasing stakes in the firm of their personal interest, with the advantages that they could do so at their preferred time, and with normally lower transaction costs. Moreover, Levy and Sarnat (1971) proved that unless a conglomerate acquisition can produce economic gains from synergies or economies of scale there is no other

[3] Exceptions to this argument are some very big companies that conduct enough transactions to develop the necessary skills to perform financial activities themselves, like GE Capital Corporation and Tesco.

advantage for shareholders that invest in perfect capital markets. In such markets, with prices being in equilibrium, investors would have included in their market portfolio the shares of their preferred firms in the optimal proportion, so as to reflect the possibility of the respective acquisition. Hence, it is unlikely for the share value of the combined entity after the acquisition would be greater than the sum of the share values of the two firms if they would have operated separately. Risk reduction per se, therefore, is not a source of economic gains through firm diversification in perfect capital markets.

On the other hand, a takeover allows management to exploit any potential financial synergies through the coordination of production activities, which cannot be achieved by the shareholders themselves if they choose to diversify their portfolios instead. However, a question arises as to whether the exploitation of any financial synergies offset the costs imposed by the operation of unrelated business under the same top management[4], especially in the contemporary economic environment where intense competition drives firms not only to increasingly focus on their core business but also to outsource parts of their activities in an attempt to enhance their flexibility and their expertise[5]. It is also noticeable that the conglomerate merger wave of the 60's was followed by an extensive wave of divestitures.

Stapleton (1982), challenges the proposition that an acquisition can always yield economic benefits to the shareholders through the increase of firm's debt capacity. Stapleton suggests that the degree to which shareholders are likely to enjoy gains depends on two economic parameters; first, the level of the wealth transfer from shareholders to bondholders at the time of the merger, and second, the extent to which the bondholders' gain provides for a greater debt capacity that consequently allows greater leverage for the firm. The increased leverage could allow gains for the shareholders greater than the loss they suffered at the time of the merger for the benefit of the bondholders – however, this should not be taken for granted.

Stapleton's argument is based on the proposition that an option on a portfolio

[4] Apart from the economic fact that any gains from the realisation of synergies after the takeover must more than offset the costs of the transaction, other costs may emerge as a result of (1)the integration process, (2) the difficulties of monitoring the process on behalf of the shareholders, (3) the possible change in the level of mid- and lower management productivity after the feeling that some explicit or implicit working contracts will be cancelled, and (4) the possible clash of cultures in the integrating organizations, and others.

[5] This argument questions not only the expected financial synergies after an unrelated takeover but also all other forms of synergies that will be discussed later in this section.

is generally worth less than a portfolio of options. Considering a firm's equity as a call option on the cash flow and assets of the firm with an exercise price equal to the obligations to the bondholders, the equity of the joint company after the merger represents a call option on its cash flows and assets at an exercise price equal to the two separate bondholder obligations. In other words, this is an option on a portfolio that is worth less than the portfolio of options that the equities of the two separate companies represented before the merger. As a result, shareholders suffer a loss.

On the other hand, bondholders enjoy a gain; Stapleton compares the yields of two hypothetical companies before and after the merger. The yield of the debt of the combined entity falls, reflecting the added protection the merger provides to the bondholders[6]. However, the yield after the merger depends on the correlation of earnings of the two firms; with perfectly correlated earnings the yield remains unchanged while it falls as the correlation decreases. Moreover, added protection to the bondholders is provided by the merger - even with perfectly correlated earnings – if one of the two merging firms is below its debt capacity at the time of the merger; in this case debt yield falls reflecting an increase in debt value of the united entity. In short, Stapleton, using option pricing theory, proves that at the time of the merger, ceteris paribus, shareholders suffer a loss of wealth and bondholders gain.

Therefore, in the case of an unrelated[7] acquisition, apart from the possible gains resulting from financial synergies, management must weight the possibility that the value of equity of the combined entity is likely to be less than the sum of the individual equity values, and the value of the debt to be increased.

b) Operational Synergies

Operational synergies can result from several sources, such as cost savings, economies of scale and scope, transfer of knowledge and pooled negotiating power, and tax savings. Cost savings arise when combining firms can share tangible assets or resources. This is the case when the merging firms can share the usage of

[6] The fall in yield indicates the increase of the value of the obligation to bondholders of the merged firm.
[7] In the case of a pure conglomerate merger, Stapleton assumes, that one would not expect perfectly correlated earnings.

manufacturing facilities, research laboratories, information systems and sales staff, economizing from the elimination of jobs, facilities and functions that are no longer necessary; this kind of cost reduction is possible especially in horizontal mergers. Mergers between firms operating across the production chain – vertical integration - can help them to avoid costs related to various problems that may exist between a customer and a supplier. The united entity can reduce inventory and logistic costs or it may have better access to the market outlets. In manufacturing, firms that are integrated vertically may expect to face fewer delays and barriers associated to contracts that may exist across the supply chain, and therefore they can accelerate the procedures of the development of a new product. Speeding the development and production of a new product is sometimes a very crucial factor for market success, especially in competitive industries where the first mover advantage is really important[8].

Vertical Integration provides for the elimination of transaction costs that firms operating across the supply chain may incur when trading and implementing their transactions in the classical market contracting mode.

Reekie and Crook (1994) illustrate the efficiency argument for transaction costs rationalization through vertical integration. When two trading parties are proceeding to construct a trade contract, it is very likely that they possess incomplete information. Given the limits of the information available to them, they attempt to achieve the best possible outcome; that is they seek to realise a satisfactory level of performance instead of maximizing it. This is a rational choice on behalf of contractors if one takes into account the exceptionally high – and often unacceptable - costs for searching and gathering the relevant information. However, the resulting contract is incomplete in the sense that it fails to maximize performance because the contractors are *'boundedly rational'* for they are not fully informed[9]. Therefore, costs may arise during the life of a contract due to bounded rationality of the contractors; the traders cannot write perfect fully detailed contracts and they are not able to foresee every possible contingency in contract execution. In addition, it is almost

[8] This is not to say that the first mover does not face risks or possible costs. In some instances, however, a successful firm tactic imposes the fast launch of a new product.

[9] Contractual incompleteness may also be the result of information asymmetry between the contractors.

impossible to decide and agree beforehand on alternative courses of action in the presence of such contingencies.

Furthermore, during the life of a contract, it is likely that contingencies related to opportunistic behaviour of the two parties arise. According to the authors, transaction costs economics assume that the two parties trade with each other '*not only with incomplete information but each is motivated to a greater or lesser degree to conceal information which he does have to make the terms of trade finally agreed upon less favourable to the other*' (p.425). Contractors may possess different information about the nature of the trade at the pre-contractual period. Such an information asymmetry between the two parties may give incentives to either side to conceal or misrepresent information about itself[10], given that each one tries to optimize performance within constrains of information. Post-contractual opportunistic behaviour, on the other hand, arises because contracts are rarely complete. As a result they fail to align the incentive of both parties. It is likely that each contractor has different level of commitment to achieve the same goals. Thus, an attempt for the ex-post renegotiation of specific terms of the contract under conditions more adverse for either party or even the renege on the contract is probable. Moreover, when such an opportunistic behaviour is detected it is difficult and costly - if not impossible – for the terms of the contract to be enforced.

Reekie and Crook (op. cit.) considering vertical integration as a solution to problems related to contractual inefficiencies that result to high transaction costs, illustrate the Williamsonian argument about the time dimension of contracts. Transaction costs may prove high, after the time at which the contract is drawn up and executed. Initially, at the time of the trade agreement, the terms of the trade depend on the number of varying suppliers (or demanders) and the degree to which there are monopolistic (or monopsonistic) conditions in the industry they operate. Typically, there is a large number of bidders for the trade contract. However, when the nature of the trade requires a contract renewal, it is likely that the number of potential bidders has become small. This is because after the trade has been initiated the supplier supports the trade with the development of human and physical assets

[10] Consider the example where a potential supplier of an industrial firm proceeds to contractual negotiations, concealing information about the supplied product's future maintenance costs in order to provide a more competitive offer and win the contract. Or, individuals seeking to buy a life insurance contract from an insurer, while being dishonest about their full health condition.

specific to the agreement. Therefore, once the time for contract renewal comes, the demander is more likely to continue the trade with the existing supplier since he or she may face difficulties to find another supplier who can support the agreement with the required specific assets; or, even if she or he finds a supplier willing to create the specific assets to serve the agreement, this would presumably be feasible with less favourable terms in comparison to those provided by the existing supplier[11]. Hence when asset specificity condition exists, hold up problems may arise. Asset specificity provides for a fertile ground for the development of opportunistic behaviour at the renewal stages of the contract which can increase substantial the cost of trade.

In the light of the above arguments, firms may choose vertical integration to avoid the high transaction costs that accompany contracts in the conventional trade across the supply chain. Bounded rationality, opportunism, and asset specificity condition are all reasons for vertical integration.

Acquirers frequently choose acquirees within the industry in which they operate with the expectation to increase the size of production in order to realize *economies of scale*. Economies of scale arise with the increase of the production output rate; average cost of production declines as fixed costs are distributed over a greater range of units[12]. Weston et.al. (1998) say that economic theory assumes that economies of scale do exist in the industry and that prior to merger, firms may operate at levels of activity that are not adequate for the realization of economies of scale. Costs for salaries, costs for utilization of machinery and equipment, costs for plant operations and other fixed costs, provide increasing returns if spread over a large number of units of output. In other words, the firm activity must be above a minimum level so as it can minimize the costs of production. Thus, large producers can be more competitive than small producers, and therefore, a takeover is often the means for the increase in production so economies of scale can be achieved. Economies of scale also result from specialisation of labour and equipment, from stochastic factors and from geometric relationships all of which may be gained at larger plant size. Notice, however, that operational economies of scale occur at the

[11] On the supply side, specific assets will have higher value in contract renewal rather than in other uses.
[12] As Besanko et.al (2000) explain, when there are capacity constrains fixed costs can decline up to the level of output; above that level, marginal costs per unit of output increase above average cost and as a result average costs rises as production increases.

level of the plant (which does not change in size in a merger) rather than at the level of the firm.

Economies of scope arise when a firm can increase the variety of goods and services it produces using the same infrastructure; the firm then enjoys cost savings since total costs of producing a range of products together are less than if each kind of product would be produced separately by two or more other firms. A characteristic example of realization of economies of scope is that, when a financial institution with a focus and expertise on mortgages is merged with another one whose basic business is insurance. The latter using the clientele, the sales force and the outlets of the former, can sell insurance to existing or future homebuyers. Acquisitions that aim to achieve economies of scope can take place between firms operating within the same industry or within related industries or even in totally unrelated ones. This depends on the strategy of the merging firms' managements for the variety of products and services which can be produced and promoted together using their common production lines and outlets.

Nevertheless, it is essential for a potential acquirer to specify, as precisely as possible, the sources of cost savings that can be achieved after the merger with the candidate acquiree, and the extent to which it is feasible to realise those expected cost savings. Eccles et. al. (1999), identify three possible problematic areas in which the aim of cost savings may prove very difficult. First, since definitions of cost categories vary from one company to another, it may happen that the elimination of costs in a category be much more difficult in practice, than the initial evaluation suggested. Second, because companies differ in their structures, it may not be possible for expected administrative cost reductions to be achieved at corporate or divisional level, as essential work is done in unexpected places. Finally, projections for estimating the level of firm downsizing after consolidation can prove to be unrealistic, for example where skilled and talented personnel must be shifted to other positions within the firm instead of being dismissed. Then cost savings due to salaries elimination are not in line with the initially projected numbers of cut positions. More importantly, the time horizon needed for the integration to be successfully completed is often not well specified. As a result, costly delays may

occur for unexpected problems to be resolved or because employees of the previously independent companies sometimes exhibit resistance to change.

It is obvious from the above discussion that the achievement of operational synergies on behalf of the two merging firms, by sharing their tangible assets or by the increase in production, can prove to be very beneficial, as long as a scrupulous planning and a detailed integration timetable have been constructed by the acquirers. More importantly, before the acquisition the acquirer must possess for the acquiree all the necessary information needed to allow for the efficient exploitation of the common resources. Economies of scale and scope, for example, assume the capability of the integrated firm to adjust all factors of production optimally. Coordination is essential to handle efficiently the increase in production. Otherwise, what the firm economizes from the spread of costs over a larger number of units of output will be wasted in situations of bottlenecks in the production line, or in additional costs arising from an inefficient inventory management or in unreasonable logistic delays and expenditure.

The efficient sharing of tangible assets, therefore, has as prerequisite the ability of coordinating operations and sharing know-how and 'best-practices'. Hence, another form of operational synergies can result from the combination of intangible assets of merging firms. Firms often develop skills and know-how on specific tasks, processes and functions through time. This knowledge is part of the firm capital and is bound with the organisational culture. An acquisition may serve the purpose for the two engaging firms to obtain gains from the realisation of operating synergies by pooling together their insights into a particular process, function or geographical area. The transfer of organisational knowledge from one team of employees to another, by setting people with different ways of getting things done to work together, can offer benefits to both firms. Combining the expertise of different units can enhance specialisation and offer more competitiveness. It can also facilitate the creation of a new innovative business unit with combined know-how and expertise that is extracted by different units.

Rosen (1972) considers specific knowledge vested 'in the firm', as an asset that is transferable through the firm being acquired. Its price is the market value of the firm net of the market value of the physical capital. This knowledge is identified

with a type of entrepreneurship where the entrepreneur organises functions, trade connections and an efficient 'production team' which can be operated and maintained even in his/her absence [13]. Therefore, several small firms that are considered to possess special capabilities and an advanced knowledge of conducting their business are acquired by firms that place great emphasis on this type of synergy as they are increasingly concerned for corporate regeneration and growth. Apparently, sharing organisational knowledge and tangible resources are the two sides of the same coin – that of operational synergies.

A sideline of the benefits resulting from operational synergies is related to the increased bargaining power the merged firm enjoys over its suppliers. Negotiations with suppliers for the costs of production inputs, the quality of these inputs and the financial arrangements for the payments, may result in more favourable agreements and contract terms for the united entity than what they would have been able to achieve as two firms if they were negotiating separately. Moreover, a takeover can benefit a firm in its negotiations with other stakeholders, like customers and the government.

c) Taxation.

There are often tax benefits for merging firms that may make the acquisition argument stronger, depending on the method of financing the purchase. Acquisition tax reliefs differ from one jurisdiction to another - for example, an acquirer may substantially reduce the overall tax burden by financing the transaction through a finance subsidiary in an offshore financial center.

Sudarsanam (2003) summarises the basic concepts of tax rules applying to capital gains resulting from corporate acquisitions for the U.K and the U.S. In the U.K when an acquisition is financed by cash, the target's shareholders are immediately liable for capital gains tax, unless they are capital-gain-tax–exempt institutions, such as pension funds. However, U.K tax rules allow a target's

[13] Rosen distinguishes the specific firm-vested knowledge from the knowledge vested exclusively to the owners or managers of the firm which refers to the personal entrepreneurship skills of organising and maintaining complex production processes. This asset is not saleable since the firm value in the absence of the owner or manager has zero worth, if its physical capital is excluded.

shareholders to offset capital gains realised after the transaction against realised capital losses on other shares in their portfolio. Moreover, capital gains are indexed for inflation and consequently real gains on which capital gains tax is charged may not be large. Thus, under certain circumstances depending on the target's shareholders nature of business and the composition of their shares portfolio, the capital gains tax burden may be mitigated or even eliminated.

On the other hand, when an acquisition is financed by shares the target's shareholders are not immediately liable to capital gains tax. In fact, shareholders are liable to capital gains tax at the time of the disposal of the shares. In other words, U.K tax rules provide target shareholders with some flexibility regarding the timing of the capital gains realisation and the resultant tax. In the case of a loan stock transaction, target shareholders' capital gains that are accrued up to the time of the takeover are 'frozen' and carried forward until the loan stock is eventually disposed off. However, in this case accrued capital gains cannot be offset with any subsequent losses on the loan stock. Target shareholders may be unwilling to accept an offer financed by a loan stock if the acquirer is not a financially strong corporation. This is because the target's shareholders are still liable for capital gains tax on the frozen gains, if the acquirer fails. The advantage of loan stock transaction is that the interest on it is deductible for the acquiring firm.

In the U.S, for an acquisition to be non-taxable at least the 50% of the target's shares must be exchanged for stock in the merged entity. Then the stock portion satisfying this condition can be deemed taxable or non-taxable for personal tax purposes. Moreover, when the offer contains less than 50% stock, all compensation is taxable. When an acquisition is considered as taxable the shareholder must pay tax on any gain he or she realises in the acquisition. In fact, a non-taxable acquisition represents only a tax deferral for target firm shareholders. This is similar to what happens in U.K. acquisitions which are financed by stock. The target's firm's shareholders can have some flexibility as to when they will realise the acquisition gains and the resultant tax.

Since in a non-taxable offer the target's shareholders maintain substantial ownership in the combined entity, tax rules allow for the deduction of any target firm's unused tax credits and previous net operating losses (NOLs) from the

combined firm's future taxable income. In a taxable offer such a carryover is not allowed. However, the acquirer is allowed to step up the depreciation basis of the acquired assets and therefore to reduce its future taxable income. This is because the target's shareholders ownership rights are considered sold.

In the U.K, when the mode of the acquisition is stock, any revaluation of the target's assets has no tax implication. This is because the asset step up does not alter the capital allowance the target was already entitled to. Moreover, the carry over of previous years' possible net operating losses of the target so as to be offset with profits of the united entity, is subject to stringent conditions such as the continuation of business for three years after the acquisition on either side.

Although tax considerations cannot be viewed as a sole factor motivating takeover activity, there is evidence that they have an influence on investors' perception about the value that an acquisition creates. Further, even if M&As are undertaken for other motives, managements may structure the transactions in a manner that maximizes tax benefits.

Hayn (1989) indicates that from a sample of 640 mergers and acquisitions under examination in the U.S, 54% of them were taxable transactions. This implies that tax could not be the main motive for takeovers. Moreover, targets in taxable acquisitions enjoy abnormal returns about 10 percentage points higher than in non-taxable acquisitions and this pattern is also followed by the acquiring firms' abnormal returns[14] (although abnormal returns of the acquirers are the one tenth of those of the targets). These results indicate that tax does have an influence on investors' perception about the value of an acquisition. However, other factors than taxation may be more influential in M&As. For example, the author discovers that for both tax-free and taxable transactions targets' abnormal returns are substantially higher for tender offers than they are for mergers. Taking into account that most tender offers are financed by cash while most mergers are stock exchange transactions, one could argue that the role of financing decision is more influential than tax. In addition, variables like the relative size of the bidder and a target and the resistance of target's management to the offer, could better explain announcement abnormal returns than the tax variables alone, in the regression studies.

[14] Most of tax-free transactions in this sample were mergers, while most of the taxable transactions were tender offers.

Manzon et.al (1994) examined the effect of tax factors on the equity value of U.S multinational corporations making foreign acquisitions. The authors found that abnormal returns at the announcement are not related to the variable which captures the differences between tax rates in target countries and the United States, but are related to the tax status of acquiring firms in the U.S. Brown and Ryngaert (1991) argue that tax rules may affect the mode of acquisition decision of bidders. Bidders with unfavourable private information about their equity value are more likely to choose offers containing some stock to avoid the capital gains tax burden of cash offers. Ceteris paribus, target shareholders would demand higher prices in cash takeovers. Thus, acquirers with higher private valuation about their equities are more likely to offer cash despite the tax consequences. On the other hand, acquirers with lower private valuation about their equities are more likely to offer at least 50% of the offer in stock in order to avoid paying the higher cash price[15].

Taxation therefore, is a factor that affects the planning and the structure of corporate combinations. However, it cannot be considered as a determining factor when a merger or an acquisition is planned.

d) Managerial Synergies

According to Trautwein's (op. cit.) classification, a third form of synergy is that of managerial synergy. This is a type of synergy that can be realized when the acquirer's management is considered to possess superior planning and monitoring capabilities and it is expected that it can manage the acquiree resources more efficiently for the benefit of both firms' shareholders. It could be argued, that managerial synergies are a form of the aforementioned operational synergies which are achieved through knowledge transfer between the two firms. However, the difference is that managerial synergies refer exclusively to capabilities attributable to the acquirer's managers that can be applied to acquiree resources, and not to the mixture of different firm cultures and business processes conducted by the various

[15] It is worthwhile to mention that Brown and Ryngaert's model is consistent with Hayn's (op.cit.) empirical evidence indicating that targets and bidders participating in taxable acquisitions realise higher abnormal returns than targets and bidders participating in non-taxable acquisitions. Non-taxable (at least 50% of the value of the offer is stock) acquisitions it is more likely to be undertaken by bidders that posses unfavourable private information about their equities.

working teams across the firm's hierarchical pyramid. Moreover, the acquirer's management capabilities may not have been developed within the firm that they currently manage and consequently, such capabilities are not necessarily an integral part of organisational knowledge and culture. Merger terms may account for the creation of a top management team comprising of people coming from both firms[16] so that the merged firm benefits from the superior generic managerial capabilities of the acquirer management and from the firm-specific knowledge that the acquiree management possess. Thus, managerial synergies of joint planning and monitoring can be achieved.

The preceding discussion suggests that synergy, in all its possible forms, is frequently the driving force behind acquisition decisions made by managers seeking to maximize future profits. It is not the assumption that the candidate acquiree is undervalued or it could be mismanaged that drives such decisions, it is the acquirer's management evaluation of the available information which suggests that the united entity will worth more than the two firms if they operated separately, because of unrealized synergies; the acquisition decision then, serves the purpose of exploiting this value gap.

e) Evaluation.

However, there is skepticism in the literature regarding both the ability of firms to benefit from synergistic effects after the merger, and the level of the price that is often paid for the option to exploit the possible synergies. Goold and Campbell (1998) assert that corporate executives often take the existence and the achievement of synergy for granted. As a result, only after wasting capital and precious resources do they understand that expected synergy often falls short of management's expectations. Management should distinguish between the natural desirability of synergy and the feasibility of a synergy programme through to rigorous evaluation; in this way they can better estimate the possible benefits of a

[16] This may be the case of a merger implemented through a takeover that is agreed by both the acquirer's and the acquiree's managements, or even of a hostile one when the bidder's offer includes a proposition to some of the acquiree's top managers to participate in the merged firm's management team. When the acquiree remains an autonomous business unit belonging to the acquirer, there is often an exchange of people between the two top management teams.

usually expensive acquisition and also avoid the opportunity costs that are incured when management focuses on synergy projects that are unlikely to succeed.

The authors suggest four common biases which usually lead managers to believe that synergy is easier to be realised and less costly than in fact it is. First is *synergy* bias, when executives feel that the achievement of synergy is an essential part of their work; they feel obliged to create synergy –even when they do not have any special insight in creating synergy - in order to justify the existence of their corporation and the value of their work, especially to investors. Thus, being under pressure to create synergy by any means, they make unwise decisions and investments. Consequent to synergy bias is *parenting* bias[17], when top management believes that if synergistic opportunities exist they must get involved themselves in order for synergistic gains to be realised. They assume that unit managers are naturally unwilling to collaborate as they may be protective of their own authorities and be focused only on their own unit's businesses. However, unit managers – according to the authors - have many reasons to cooperate, while whenever this does not happen, it is usually for good reasons. As a result of parenting bias, corporate executives often discount unit managers' objections and intervene excessively, creating conflicts and disappointment feelings that lead to declining productivity. A corollary effect of parenting bias is the belief of being able to intervene effectively where they feel it is needed, on behalf of corporate executives. This belief of having always the necessary skills for intervention often creates more problems than those it resolves. This is the third kind of managerial bias related to synergy – the *skills* bias. Finally, is what the authors call *upside* bias that may prove harmful for firms trying to implement synergy initiatives without sufficient rational planning.

Goold and Campbell (1998) argue that managers often overestimate the benefits of collaboration and underestimate the possible side effects. Collaboration programmes may create a fertile ground for exchanging knowledge, expertise and best-practices. On the other hand, it can have adverse effects on employee motivation and innovation, on the feeling of personal accountability on behalf of employees, on the pace of organisational change, and on the way unit managers understand their businesses and their roles. Therefore, the clarification and evaluation of the

[17] See Goold and Campbell (1998).

objectives and benefits of a synergy programme is essential for the success of such an initiative.

Sirower (1997) takes an even more skeptical view against synergy benefits. The author, quoting a brief overview of the post war empirical evidence on M&As, suggests that there is consistent evidence that acquisitions destroy value after the 1980's. He asserts that '*for most acquisitions achieving significant synergy is not likely*'. The level of this 'significance' is strongly related to the premium the acquirer pays; even when synergy is present, performance improvements fall short of what is required for the justification of the premium paid. Paying the premium, an acquirer makes a commitment to deliver more than markets already expect from current strategic plans. In the absence of trial and error opportunities, the integration process is a non-stop funding project[18] with no way of a cheap exit if difficulties arise. Moreover, competition in the industry is always present, with competitors chasing the same objectives with those of the acquirer. Thus, acquirers are often trapped in synergy illusions paying the premium upfront for the right to manage the acquiree resources later.

2.2.2. Private Information as a Determining Factor for Acquisitions.

As it has been stated at the beginning of this chapter, synergy is sometimes the expected outcome from acquisition decisions based on an acquiring management's perception of the target's worth. This perception may occur when acquirers possess the same information as other actors in the industry and it evaluates this information in the same manner. The acquiree has a special and unique value for the acquirer for it will increase efficiency and it will enhance competitive advantage through the realisation of synergies if the two firms operate jointly. Implicit in this case is the notion that the acquiring management acts in accordance with their shareholders best interests; it attempts to ensure future profit maximization.

[18] According to Sirower (1997), p.6, '...once companies begin intensive integration, the costs of exiting a failing acquisition strategy can become very high.....the integration of sales forces, information and control systems, and distribution systems, for example, is often very difficult to reverse in the short term. And in the process, acquirers may run the risk of....losing their ability to respond to changes in the competitive environment'.

However, the managers of an acquiring firm may possess different information from that of other parties, for a specific target[19]. This information is nonpublic and therefore is not reflected in the current share value of the target. In other words, the acquirer's management perceives the potential acquiree as a 'bargain' and they are willing to pay a premium[20] to take over the management of the acquiree resources.

Positive private information, regarding the value of a potential target, may refer to future opportunities for growth and profitability – in a short- or mid-term time horizon – in the business area of the target[21], or the acquirer may consider that the resources of the potential acquiree are not efficiently used for the purpose of profit maximization. The mismanagement of the acquiree resources under the current management team has as a consequence an evaluation by the market below its potential value. The public offer for the acquisition then, is itself a revealing action of the existence of an undervalued target. Apparently, this argument assumes that the efficient market hypothesis – at least in its strongest form – does not hold. In practice, acquisition targets incur a substantial upward revaluation from the market after the first offer, which seems consistent with the private information hypothesis[22].

Research has focused on unsuccessful offers in order to test the validity of the information hypothesis. Supportive empirical evidence is provided by Dodd and Ruback (1977). The authors examined successful and unsuccessful bids for U.S. firms in the period from1958 to 1976. Their findings indicate that both acquirers and acquirees exhibit positive abnormal returns on the value of their stock, in the month of the offer announcement. However, only successful bidders earn significant positive abnormal returns, while stockholders of both successful and unsuccessful target firms earn large significant positive abnormal returns during the announcement month – a significant 20.6% for the former, and a significant positive 19% for the

[19] It is apparent that the procession of positive private information for a potential acquiree on behalf of the acquirer management and the objective of realisation of synergies or economies of scale are not mutually exclusive. To the contrary, such an 'overlapping' of the motives of acquirers, sometimes make the results of research difficult to interpret.

[20] Obviously acquirer's management is willing – or should be willing - to pay a premium, which is less or equal to the amount that the acquiree is undervalued by the market, as it has been evaluated by the acquirer at the acquisition evaluation projections that made before the bid.

[21] However, such a hypothesis does not answer to the question why other players in the industry that are chasing the same goals and objectives with those of the potential acquirer are not being able to perceive these opportunities.

[22] Nevertheless, as Caves (1989) suggests, this positive revaluation of the target after the first offer may be consistent with the receiving of an anticipated premium.

latter. While the results regarding acquirers give some support to the synergy hypothesis[23], the returns for acquirees strongly support the information hypothesis.

Similar evidence is provided by Firth (1980) in a study of U.K. firms in the period from 1969 to 1975. The findings suggest a significant increase in abnormal returns (6.5% for target firms being taken over, and 8.4% for target firms not being taken over) in the month prior to the announcement of the offer. After the announcement, abnormal returns for targets were not found significantly different from zero, regardless of whether the bid was successful or not[24].

However, these results are challenged in a study by Bradley et.al. (1983). Extending the study period, the authors discover that when an unsuccessful tender offer is not followed by a successful one within a five year period, the share price of the target firm is completely reversed to its original level (before the first offer). This finding indicates that if the 'positive information' hypothesis was true, the price should not be reversed, since the positive information released at the time of the first offer would be valid, regardless of the outcome of the offer. The authors explain that the price rise is caused in the light of the potential synergy, and this is the reason why the price is reversed to its original level when the possibility of the merger declines. In the same study, unsuccessful bidders' share price behaviour is not in favour of the information hypothesis either. Bidders that made an unsuccessful bid which was not followed by further bids do not experience considerable changes of their share price. However, when an unsuccessful bid was followed by another rival bid that turned out to be successful, the original bidder experiences a statistically significant decline of its share price of 2.84% at the time of the rival's bidder announcement. The evidence is interpreted by the authors as supportive to the synergy hypothesis; the market perceives the loss of the acquisition competition on behalf of the initial bidder, as a lost opportunity to acquire a valuable resource.

While the hypothesis that the acquirer's management may possess private positive information for the target seems weak in the light of the empirical evidence provided by Bradley et. al., Roll (1988) 'modifies' the argument suggesting that the

[23] Since only successful bidders enjoy positive abnormal returns, markets expect a better performance from firms engaging in takeover activity, due to synergy. However, when the period of study is extended to a two-month window, bidders' performance declines to a negative 1.7%.

[24] Contrary to targets, bidders experience no abnormal returns prior to the announcement and a significant negative abnormal return of 6.3% in the month of the offer announcement

offer may reveal the possibility of the existence of private positive information and not the certainty of such information. When positive information about a potential target does exist before the first bid, it is more likely that further bids will be elicited. Such targets have increased probabilities of being acquired. But if positive information does not exist in the first place, the target is unlikely to elicit further bids because there would not be much incentive from other potential acquirers to bid As a result, such targets are less likely to be acquired and their share price falls back to its original level. As far as price behaviour of unsuccessful biding firms is concerned, Roll explains that the appearance of a rival bid increases the probability that there is some private positive information, while it decreases the probability that the initial bidder is the exclusive possessor of such information and the probability that it will be the ultimate acquirer. Hence, unsuccessful bidders experience losses. However, unsuccessful bidders' share price behaviour is consistent with the synergy hypothesis as well.

Niden (1993) provides evidence supportive to Bradley et.al. reasoning that synergy, and not private information, is the main force driving bidding firms. The author examined the characteristics of white knight acquisitions in comparison with hostile and friendly non-white-knight acquisitions. Although his results are strongly supportive of overbidding by white knights, the sample is characterized by positive synergies, on average, regardless of the segmentation of the data on the basis of target management response to the bid. In detail, white knights experience losses, after entering to the bidding contest, greater on average than those experienced by friendly non-white-knight bidders and in some cases greater than those experienced by hostile bidders. Targets acquired by white knights experience gains which are not significantly different from those that experienced by targets acquired by non-white-knights in multiple-bidder acquisitions[25].

These results challenge Shleifer and Vishny's (1986) argument that an acquisition by a white knight represents an optimal synergistic combination of target and bidding firm assets. The underlined idea of this argument is that a target possesses private information regarding the achievement of the highest valuation of

[25] In fact, target gains at the announcement period are similar for white knight and non-white-knight acquisitions only after controlling for bidders' competition in the regression of the wealth effects at the announcement against the variables describing acquisition characteristics.

its assets which it shares with the white knight but it withholds from other bidders. If such a hypothesis hold, greater synergies (i.e. combined target and bidding firm shareholder wealth effects) should be observed in white knight acquisitions than in non-white-knight ones.

2.2.3. Hubris – Winner's Curse.

It is worthwhile to underline at this point that the above discussion is based on the assumption of the absence of efficient markets. If private information for the present or future performance of a potential acquiree exists, then at least the strong form of the efficient market hypothesis does not hold. Moreover, it was implicitly assumed that an acquirer's management makes rational[26] decisions when it evaluates information concerning acquisition opportunities while it implements its main task, the enhancement of shareholder value.

Nevertheless, it could be argued that it is more likely that the individual decision makers make mistakes in their assessment of a potential acquiree's value rather than the markets making mistakes.

Roll (1986) developed the hypothesis that in an efficient stock market the initial bidder is the market, and the initial public offer is the current price. The potential acquirer knows for certain that the shareholders of the target firm will not sell below that price. Thus, when the bidder's valuation falls below that price no offer is made, while if the bidder's valuation exceeds the market price, a bid may be made and becomes part of the public record. The bidder's valuation includes any estimated economies due to synergy and any assessments of weak management that might have caused a discount in the target's current market price. However, any bid above the market price represents an error. Roll postulates the strong form of the efficient market hypothesis to support the argument; all available information regarding a potential target before the first offer is reflected in its share value.

The author asserts that even if each individual investor behaves irrationally, a market actually populated by rational beings is observationally equivalent to a

[26] Becker (1962), defines 'rational behaviour' as the '*consistent maximization of a well-ordered function, such as utility or profit function*'.

market characterized by grossly irrational individual behaviour that cancels out in the aggregate, leaving only the systematic behavioural component that all participants[27] have in common. Hence, the real value of any (target) firm is reflected on its market price. On the other hand, the management of the bidding firm may have convinced themselves that their valuation is right and that the market does not reflect the full economic value of the target firm. Hence, this overoptimism of managers of acquiring firms leads to positive valuation errors, and as a result, acquiring firms pay too much for their targets. Overoptimism on behalf of acquiring managers arises from an excessive feeling of self-confidence, and arrogance and pride; this is the so-called "*hubris*" hypothesis. Hubris is an explanation regarding the driving forces behind takeover activity that is based on an overbearing presumption of bidders that their valuations are correct. The hubris hypothesis maintains that acquisitions are motivated by managers' mistakes and that there are no ex post gains from synergy. Since acquirers overpay for acquirees which are already fairly priced by the market, there is a wealth transfer from acquirer's shareholders to acquiree's shareholders[28].

A plausible question about hubris is that if acquisition decisions benefit only acquiree's shareholders, then why do bids still happen and why is each subsequent wave of merger larger than the previous one both in terms of value and of the number of the engaging firms?

As Roll points out, there is little reason to expect that the individual bidder will refrain from bidding because he/she has learned from his/her own past errors. Although some firms engage in many acquisitions, the average individual bidder/manager has the opportunity to make only a few takeover offers during his/her career. Moreover, in a later publication, Roll (1988) relaxed the argument about hubris stating that '*hubris cannot be the sole explanation of the takeover phenomenon*' (p.250). Asserting the opposite would imply that after every bid announcement a decline of the bidder's share price should be observed. In fact, there is some evidence in the literature –though weak - that there is an average increase in bidder's share value after the offer. In addition, if hubris was the only inspiration for takeover offers, shareholders would strictly prohibit them by applying a prohibition

[27] Roll (1986, p.199), explains that "one possible definition of irrational or aberrant behaviour is independence across individuals, and thus, disappearance from view under aggregation".

[28] Even if there were synergies, competition among bidders – or the prospect of the emergence of a potential rival bid – encourages acquiring managers to pay more than the future gains from the prospective synergistic gains.

clause in the corporate charter[29]. Thus, acquirers' shareholders might occasionally find individual acquisition decisions beneficial.

Seth et.al. (2000) provide supportive empirical evidence to this more moderate version of the hubris hypothesis which is consistent with the synergy hypothesis and managerial rationality. Using a sample of 100 cross-border acquisitions which were implemented by US firms, the authors find that in the majority of the acquisitions, gains are explained by the synergy hypothesis while the hubris hypothesis appears to play a role in value creating transactions. The explanation provided is that rational managers may be motivated to undertake acquisitions which are expected to be value creating transactions and which do indeed result in synergistic gains. However, rational managers may make valuation mistakes about the value of a target. Therefore, although synergistic gains are positive – i.e., the value of the combined entity exceeds the pre-acquisition value of the combining firms on average – some such acquisitions may result in overpayment by the acquirer to the target, and hence, in a loss to shareholders of the acquirer firm. The results provided by Seth et.al, (op. cit), are consistent with that provided by Berkovitch and Narayanan (1993) who found evidence of hubris in a sub-sample of takeovers that reflected positive gains.

Varaiya (1988) points out that the hubris hypothesis is in essence a special case of the winner's curse from auction theory. The winner's curse hypothesis maintains that in a *common value auction*[30], when there are many bidders for an object of a highly uncertain value the winner of the auction is likely to be a loser. It is likely, that the winner has made the highest positive valuation error amongst all bidders regarding the value of the auctioned object. In the case of acquisition offers the winning bid may exceed the expected[31] value of the target firm and consequently the bidder loses money, or, the value of the target may prove simply less that the estimations on which the winning bid was based, and so the winning firm is disappointed.

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[29] However, in a world with no transaction costs such a prohibition would be irrelevant to a diversified investor who holds securities trading in a perfect capital market, because hubris implies a wealth transfer from the one security to the other.

[30] Thaler (1992) explains that a *common value auction* is an auction where the asset has the same value to all bidders.

[31] Bidders evaluate the prospective benefits from the acquisition before they bid. Their evaluation is based on the assessment of the available information about target's assets and on their perception of the future benefits they will enjoy if they manage these assets.

The winner's curse is a manifestation of irrationality on behalf of the acquiring management, which consequently leads to overpayment. According to Cox and Isaac (1984), the winner's curse cannot occur if all bidders are rational. Bidders pay more because they exhibit irrational behaviour overestimating the value of the target. An important distinction must be made, however, between hubris and the winner's curse. Despite the fact that both hypotheses assume that bidders often behave irrationally and commit valuation errors, the former ascribes the source of this irrationality to managerial overoptimism and excessive arrogance that happens even without competition, while the latter assumes that there are more than one bidder in competitive circumstances and the winning bidder may commit a valuation error of a non defined source. Thaler (1992) quotes extensive empirical evidence, supporting to the winner's curse in common value auctions.

Nonetheless while both hypotheses seem intuitively appealing, it would be an exaggeration to argue that all takeovers take place because of managerial arrogance, and that every winning bid is a result of an unintentional positive valuation error. In addition, a target's assets and resources may have different values for different bidders, and therefore, the valuation of each potential acquirer may be based on different assumptions of their post-takeover utility[32].

2.2.4. Growth.

Referring to the hubris hypothesis and in the light of the large number of unsuccessful acquisitions, Mueller (1989) argues that it seems unlikely for scientific management to be continually wrong in assessing the potential gains from an acquisition. Moreover, for the author there is an issue as to whether past experience leads to a correction of future expectations; in other words it seems unreasonable that managers do not learn from unsuccessful past acquisition records.

Mueller suggests that apart from the case that managers are victims of their overoptimism, there might be two other possible motives for mergers. The first possible explanation for the large number of unsuccessful mergers is that managers

[32] In other words, acquisitions may not be common value auctions.

simply might not expect them to be successful[33]. If a large company is based in a slow growing or even declining industry the management may engage in an acquisition of a company outside the industry of its operation. Such an acquisition is attractive to the management of the acquiring firm, not because of its possible future prospects for the two partners, but simply because managers are not keen on supervising a company which operates in a declining industry[34].

The second explanation ascribes a more straightforward reasoning for growth seeking motives to management; managers may undertake a takeover as a quick way to expand a firm's size. In light of the complete separation of ownership from control in the modern corporation, when management compensation schemes are based on firm's size[35], managers may be willing to sacrifice some profits and present value of a firm's stock in order to achieve sales or asset growth.

Regarding the first possibility, in an earlier work Mueller (1969) asserts that growth maximizing management may undertake conglomerate [36] acquisitions selecting first from those firms which promise some synergistic interaction with their own operations and turn to firms with no synergistic potential only after the former opportunities have been exhausted or been blocked. Additionally, it can be assumed that a growth maximizing management would engage in takeover activity regardless of the availability of acquirees that offer synergistic opportunities. Therefore, the argument goes, if managers pursued shareholder wealth maximization mergers, takeover activity would decline over time after the exhaustion of all synergistic opportunities[37]. Mueller concludes that this does not seem to be the case, since in the period under examination - from 1962 to 1968 - acquisition activity occurred at a scale that was many times higher than the scale of the preceding periods both in terms of the number of the engaging firms and the total acquired assets.

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[33] Mueller (1989) argues that the large number of acquisition deals that are financed by stock when an acquirer's stock outperforms the stock market during periods of general optimism, gives support to the hypothesis that acquiring managers are aware that the acquisition may not be a value enhancing one.

[34] It should be noted, however, that such a motivation is not necessarily against shareholders' interests. In other words, managerial interest for growth might come together with the attainment of possible synergies.

[35] Firth (1991) provides evidence that top managers may enjoy higher income and perks even when there is a decline in performance of the acquiring firm.

[36] Mueller (1969) suggests that the growth maximization hypothesis, while it is particularly useful for explaining conglomerate mergers, it can be applied in all type of mergers.

[37] Mueller (op. cit.) suggests that shareholder wealth maximization mergers can be justified as beneficial to the acquiring firm's shareholders only if some economy of scale or synergistic potential exists.

However, one could challenge the above argument, assuming that the periodic occurrence of merger waves represents exactly the opposite of what Mueller suggests; i.e. the end of each merger wave is the result of the exhaustion of synergistic merger opportunities that emerge in each new economic and technological cycle, on behalf of wealth enhancing oriented managements. Alternatively, while it seems plausible that shareholder wealth maximization managements would undertake acquisitions only if a synergistic potential, or a possibility for creation of economies of scale exist, there is no certainty about the limits of synergistic merger opportunities in a world of rapid technological advancements and divergent resources and interests.

The second possibility - which assumes that managers seek growth maximization in order to secure their status and increase their income – precludes any possibility of profit maximization motives on behalf of acquiring managers. Growth maximizing management may justify an acquisition as 'synergistic', but knowingly proceed to an unprofitable transaction to fulfill its own objectives. In this case there are totally divergent interests between the shareholders and the management of the acquiring firm. It is therefore the principal – agent relationship which gives managers the discretion to pursue personal goals at the expense of shareholders' interests.

The growth hypothesis - in contrast to hubris - implies that the payment for an acquisition, and specifically the premium that is paid, does not necessarily reflect the acquiring management's perception about the value which can be created in the post acquisition period. Acquisition payment is a means for company growth; decision makers pay what the acquisition market requires in order to increase a firm's size. Management evaluates all available information regarding a potential target, but in this case the management's objectives are not related to value creation opportunities and profit maximization.

Nevertheless, it is difficult to clarify whether acquiring managements undertake unprofitable acquisitions by mistake or because they knowingly seek some alternative objective. As Mueller (1989, p.7) points out, such a question is unanswerable 'in the absence of testimony at the time of an acquisition by managers under the influence of truth serum'.

2.2.5. Agency.

The managers' behaviour towards maximizing their own utility by means of increases of their firm's size at the expense of shareholder wealth, as described in the above section, is often referred to the literature as "managerialism". This argument suggests that the management incentive for acquisitions – and consequently the result of them – is often the extraction of value from the acquirer shareholders by acquirer management [38]. Managerialism, therefore, implies that takeover activity is a manifestation of the agency problems of inefficient external investments by managers.

Compensation, power, prestige, and job security are likely to be valued by managers, and maximizing size might improve the probability of achieving these goals. Berkovitch and Narayanan (1993) argue that the acquirer management may identify the target as one that is most suited to increase its own welfare rather than the welfare of the acquiring company's shareholders. For example, specialist managements may acquire firms in their own lines of business so the success of the combined entity will depend even more on their specific skills. The management can exploit this dependency to increase perquisite consumption or defeat rivals who are better than itself in running some of the operations of the firm. Such management actions result in inefficiencies that reduce the total value of the combined firm available to shareholders.

Moreover, in large corporations where equity is widely dispersed and efficient monitoring on behalf of shareholders is very costly or even impossible, top management may use the available cash to proceed with acquisitions which serve the purpose of increasing their own power. Managing very large corporations, CEOs can enjoy prestige and power to influence decisions within or outside of their local society. Thus, management often may have strong incentives to undertake even negative net present value acquisitions in order to increase the resources under their control.

[38] The underlined idea of this argument – the separation of ownership and control in the firm - falls within the so-called managerial theories of the firm developed by Baumol (1959), and Marris (1964) and Williamson (1964).

Considering the agency costs associated with conflicts between managers and shareholders over the payout of free cash flow, Jensen (1986), formulated the free cash flow hypothesis. Free cash flow is the remaining cash flow after financing all of a firm's positive net present value projects. According to Jensen, a shareholder wealth maximizing firm must pay out the free cash flow to shareholders[39]. However, in cases where a firm generates substantial cash flows, severe conflicts between shareholders and managers may arise over the firm's pay out policies. This is because payment of cash flows reduces the resources that are controlled by managers and limits their ability to exercise their power and influence. Moreover, when paying free cash flows to shareholders, a management is potentially subject to monitoring by capital markets, should the firm need to obtain new cash.

Therefore, management may often undertake negative net present value investments so as to expand firm size, instead of paying out dividends to shareholders; this policy increases the resources under their control and also it often increases their compensation[40]. In addition, Jensen suggests that the tendency of some firms to reward middle managers through promotion, instead of yearly bonuses, creates an organisational bias towards growth in order for the necessary new positions required from such a promotional scheme to be supplied.

The Free cash flow hypothesis is special case of a wider range of agency problems which may exist in the firm. Since shareholders and their agents – the managers – are self-interested, there are conflicts over the choice of the best corporate strategy. Agency problems incur costs to shareholders, such as costs of monitoring and bonding managerial behaviour and efficiency losses that are incurred should the conflicts of interests persist. Agency problems can not be resolved perfectly since they are embedded in the very nature of the principal – agent relationship.

In cases where agency problems become very costly for a firm's shareholders, takeovers can be considered as a solution. A takeover can serve the purpose of the replacement of a management that pursues its own objectives instead of the

[39] In their well – known work, Miller and Modigliani (1961), argue that in perfect capital markets dividend policy is irrelevant to firm's value. However, in the real world, there is a well – documented preference on behalf of investors towards cash payments in the form of dividends, instead of the uncertain future capital gains or increased future dividends should the residual cash be retained and invested in the firm.

[40] Murphy (1985) suggests that where growth is measured by increases in sales there is a positive relation between management compensation and firm's growth.

maximization of shareholder wealth. In this sense, a takeover is not a manifestation of agency problems as managerial theories suggest, but the natural outcome of them. Even when equity holders are dispersed and unorganized, in the view of serious agency costs, a more profit-oriented firm can acquire the necessary number of shares by publicly announcing a bid, in order to replace the existing management and to increase profitability and the value of the firm; under such conditions, plausibly, the shareholders of the target would be willing to accept a premium and replace the problematic management team.

The Market for Corporate Control.

The preceding discussion suggests that an acquisition is a last resort solution of agency problems between a target's shareholders and managers. If the associated costs become excessive, the firm's efficiency may decline and consequently its value will drop below the level that would be acceptable for its shareholders to continue to hold the stock. In addition, other management teams may recognize that the firm operates below its full potential, failing to maximize profits. The same result, however, is produced when the management of the firm is inefficient in the utilization of available resources. If the incumbent management team is not competent to maximize a firm's profitability by timely and effectively exploiting all the internal and external opportunities[41], then alternative management teams may enter in a competition for the rights to manage corporate resources (Jensen and Ruback, 1983). Thus, takeover threat can serve as a disciplinary mechanism for managers. At the same time a takeover is a means for the replacement of a management that lags in performance either because of inefficiency or because of agency problems[42].

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[41] Jensen (1988) explains than when changing technology or market conditions require a major restructuring of corporate assets, incumbent managers often have trouble in effectively proceeding with this restructuring. It is often necessary to abandon major projects, relocate facilities, to change managerial assignments and to close or sell all unnecessary facilities or divisions. After a takeover, it is easier for the new top-level management to implement these changes since it has a fresh view of the business and no ties with employees and local communities.

[42] Roll (1988) argues that an inefficient management can be replaced by a variety of devices not just by a takeover; such devices include proxy fights, replacement of operating managers by the board of directors, or replacement of directors through stockholder vote. Probably, takeover costs are lower than those of such alternatives.

The idea that the market for takeovers provides an external control device for management actions has its roots in Marris' (1964) theory of the firm. Marris' theory maintains that the degree to which a firm is well – managed, and therefore the possibility that it can be a takeover target, can be identified by reference to a single variable; the so called valuation ratio, which is defined as the stock-market value of a firm over the book value of its net equity assets. The valuation ratio is a composite quantitative measure of all the management's actions, and therefore it is a very good indicator of success and market favour since it is a result of both market and book factors.

Marris asserts that in a possible takeover bid the proposed purchase price reflects the market valuation ratio based on the expected results of existing managerial policies. Under this model, the valuation ratio depends on three variables; the first is the retention ratio (i.e. the proportion of earnings retained within the firm) while the second is the expected rate of return on firms projects. According to Marris' theory, the management can absolutely influence the retention ratio while it has some influence on the expected rate of return since this is affected by the quality of the projects the firm undertakes. The third variable is the rate of discount, which is determined by the market (since it is applied by investors to the firm's shares). Through the influence of managerial policies on the retention ratio and the expected rate of return[43], the management team can keep the valuation ratio of a firm 'i' within a range of acceptable standards; otherwise, another management team which probably perceives a higher valuation ratio for firm 'i' than that the market perceives, could acquire the shares of the firm at a price acceptable to its shareholders (higher than the market value of the shares or the value of other bids, and lower than the value that the raider perceives). This value gap that is perceived by the raider – whether due to anticipated managerial improvement (Marris) or to anticipated synergy or other possible factors, like market power - can be expressed in terms of valuation ratios.

Apparently, management teams that try to avoid becoming takeover victims should pursue a strategy which maximises the valuation ratio. Marris theory on

[43] Nevertheless, Newbould (1970) indicates that a competent management could actually influence even the third factor; the discount rate applied to the firm's shares by investors. Skilful public relations, favourable profit forecasts and the appropriate dividend policy are all factors which can influence the rate of discount applied to firms' equity (within the general rates set by the market).

valuation ratio underlines the idea that unless a management team pursues strategies which are appreciated by the capital markets to keep the value of the firm within a range of acceptable standards, a takeover bid may be elicited by other management teams that recognize the opportunity to reorganise or redeploy the firm's assets and thereby create new value[44].

The market for corporate control, therefore, is a mechanism external to the firm that disciplines management to act in accordance with shareholders best interests. It also reduces agency costs since it provides for an external threat to top-management positions should the owners and the markets realise that the firm follows non-profit maximising strategies. Finally, it is a possible partial solution to agency problems - like the ones the free cash flow hypothesis predicts – because dispersed and unorganised equity-holders can achieve the replacement of inefficient management through the acceptance of a public offer which may be elicited by an alternative management team if the firm is considered undervalued under the current management.

2.2.6. Economic Disturbance Theory.

Gort's (1969) developed the economic disturbance theory of mergers which maintains that mergers are in part or entirely motivated by speculative or expectational motives. The economic disturbance theory suggests, in general, that mergers occur because outsiders expect to earn more with a given firm's assets than do its present owners. This implies that there may be expectations value gaps in long run equilibrium, and merger activity happens because of this divergence of expectations.

Hughes and Singh (1980) summarizing the main arguments of Gort's theory explain that mergers are expected to take place during periods of either rapidly rising or rapidly falling market prices. In a period of rising stock market prices, mergers

[44] However, if the voting majority of shareholders are convinced that incumbent management is inefficient, there would not be a reason for its replacement through a costly takeover bid. An offer on behalf of the bidder of a higher price for target's firm shares, underlines a disagreement between target's voting majority shareholders and bidder's management while it serves as a means for persuading them, Roll (1988). Roll's argument obviously excludes cases where the equity holders are unorganised and they are dispersed, a fact that would make it difficult – if not impossible – to exercise their voting and other ownership rights.

occur when outsiders obtain information about the future prospects of the firm that lead them to upgrade their evaluation about the firm's future performance, while the present holders do not hold such information. Moreover, during periods of rising market prices, outsiders may become far more optimistic than present holders about the firm's prospects on the basis of the information they already hold. In both the cases there is an asymmetry in expectations between insiders and outsiders; the former are relatively less optimistic than the latter, and thus, their different expectations lead to a merger.

Conversely, when there is a rapidly falling stock market, the present stockholders may hold information concerning the firm's prospects that outsiders do not hold. Thus, they may expect more rapid decline in the firm's stock price than outsiders expect, or they may be far more pessimistic about the future prospects of the firm than outsiders are. Therefore, insiders may be keen on selling the firm at the present price level[45].

Hughes and Singh (1980) criticizing Gort's theory, argue that the theory does not discuss the source of outsider optimism. The authors suggest that, during a stock market boom the optimism of managers for their ability to improve the performance of acquired firms accompanies a general state of optimism among investors, leading to higher share prices. Moreover, the levels of stock prices at market peaks represent a dramatic overoptimism on the part of investors regarding what future profits and dividends streams will be. Therefore, managers of acquiring firms may simply be as optimistic as all the investors during a stock market boom.

Trautwein (1990) asserts that Gort's theory does not discuss the institutional framework for mergers; it does not answer for example why the oil crisis of the early 70's did not trigger a merger wave, while in the late 60's a merger wave was triggered without any major macro economic disturbance. In addition, since most economic disturbances are of a sectoral nature, according to Trautwein one could expect a sectoral pattern of mergers. While food and oil industries are examples, the merger wave of the 60's is a counterexample.

[45] However, as Hughes and Singh (1980) assert, since merger activity tends to increase with rapid upswings in stock market prices and usually is curtailed very rapidly when stock market prices fall, this is a significant contradiction to the economic disturbance theory.

More recently, Gort's economic disturbance theory was tested empirically in a study conducted by Crook (1995) for the U.K in the period from 1969 to 1989. Crook hypothesized that the level of share prices should be positively related to the level of acquisition activity under the predictions of the theory. Also, the level of acquisition activity was hypothesized to be positively correlated with Tobin's Q ratio, since the theory predicts that in industries with low barriers to entry[46] the range of possible valuations is limited and hence, the likelihood of mergers because of valuation differences decreases. Finally, since Gort argues that the number of valuation differences increases with the increase in the number of firms that require additional capacity, Crook hypothesized a positive relation between the level of acquisition activity and output growth. No support was found for a long term relationship between the level of share prices, the Q ratio, and output growth and the appropriate measure for the level of acquisition activity, and hence, for the predictions of economic disturbance theory.

2.2.7. Market Power.

While cost reductions and efficiency increases that merger activity can bring about through synergies are seen in the literature as motives for mergers, a frequently hypothesized reason for mergers and takeovers is the assumed desire of the firm to limit competition and influence prices in the industries in which it operates – and consequently to increase its profit margins – namely, market power.

Hughes and Singh (1980), suggest that mergers can increase a firm's market power in several ways, depending upon the type of merger involved. A horizontal merger may allow a firm to increase its market share in an industry to such a degree that explicit or tacit collusion with other firms becomes possible. Moreover, horizontal mergers may increase barriers to entry. Having increased its market share through a merger, a firm may enjoy substantial cost reductions provided from scale economies; thus, it would be easier in such circumstances for the firm to engage in

[46] According to Crook, in such industries Tobin's Q can not rise much above 1. This is plausible, because the replacement costs of a firm's assets cannot rice much above their market value in industries with no or low barriers to entry.

price competition war than it would be for its potential competitor[47]. Similarly, by integrating vertically, a firm with substantial market power in one market can increase the effective market power of the purchased firm in the supply market (backward integration). Hence, such a vertical linkage may make competition more difficult for those companies operating in the supply market. In addition, a vertically integrated firm can also constitute a threat to potential entry, since any potential entrant should enter all the markets where the firm operates, in order to compete effectively.

Market power is considered in the literature as a motive for conglomerate takeovers as well. Martin (1994) explains that when a firm operates in many industries, some of its divisions may buy products from independent companies, while others sell inputs to those same companies. The conglomerate may then attempt to use the patronage of its purchasing divisions to promote the sales of its supplying divisions. Moreover, two firms that are each potential purchasers of one another's products, may upon a merger, provide captive markets for one another's products, and consequently may increase the market power of each. Thus, any potential entrant into either market would be at a competitive disadvantage due to the captive nature of the demand of each firm's products.

The degree to which merger activity limits competition, and hence influences prices, is often associated in the literature with the extent to which it increases concentration.

The process of concentration is defined as an increase in the extent to which economic activity is controlled by large firms. The Cournot theory of oligopoly suggests that when a small number of large firms operate in an industry then each firm makes its output decision so as to maximise profits given the output of all other firms. Hannah and Kay, (1977) assert that the concept of the Nash equilibrium should be incorporated in order for the behaviour of firms towards profit maximization to be more accurately described. This concept suggests that a firm chooses the strategy with the highest possible pay off, given the strategies of all other participants. Cowling and Waterson (1976) suggest that the Nash-Cournot

[47] An increase to market share of a firm may provide for cost cutting from scale economies due to a larger production rate. However, what is implied here is the ability of the firm to enjoy profits above the competitive levels because of its ability to depart from competitive pricing.

explanation of firms' behaviour in an oligopolistic market implies a positive association between prices and concentration. In other words, the less the output the rest of the industry supplies the lower the elasticity of demand an individual firm faces and consequently the greater its capacity to raise prices and profits by limiting its own output. This argument is valid for all the firms in the industry and, thus, the greater the degree of concentration the greater the excess of prices over costs.

Goldberg (1973) suggests that industry concentration could be a good indicator of the level of competition in an industry; although he asserts that no single absolute measure of competition exists. According to the author, a theory of oligopoly[48] does offer some justification for this measure of competition. The larger the share of the N largest firms, the lower will be the cost of detecting violators of collusive agreements and the more likely will the departure from competitive prices be. Infinitely repeated game theory also indicates a link between concentration and price cutting. In the light of the above arguments, many authors – and often the regulatory authorities – regard concentration as an indication of competition.

Therefore, the question as to whether mergers are being planned and executed to achieve market power turns to the question how merger activity affects industry concentration[49].

Hughes (1993) argues that although two merger waves have occurred since 1945 and concentration also has risen and then stabilized, there is no single one-to-one match between the two. In particular, while merger activity accelerated in the 60's and reached its peak in the period between 1968 and 1973, concentration increased in the 60's but it stabilized when merger activity took off. In addition, the fastest increase in aggregate concentration took place during the 1950's when merger activity exhibited modest rates. Moreover, the increased merger activity in 1980's did not affect concentration at all.

Goldberg (1973) examined the level of concentration in the US in industries where firms were acquired by large conglomerate acquirers for the period from 1954 to 63. The author examined the level of the 4-firm and 8-firm concentration ratios

[48] See Stigler, G.J. (1964).

[49] Although such an approach presumes that any effect of merger activity on concentration is a deliberate result of management motives, the possibility that industry concentration levels might be affected by merger activity being driven by other motives cannot be precluded. In any case, however, if merger activity increases concentration, this cannot be considered to be out of the attention of top-management when a merger is planned.

before and after a conglomerate acquisition as well as the Herfindahl index, in various product markets. He also examined the percentage change in the concentration ratio by dividing the change of the concentration ratio by the initial concentration level. The results of the study indicate that more industries experienced decreases in concentration than increases after conglomerate mergers had occurred.

The author also used regression analysis to investigate the possible influence on concentration change of various variables, which were hypothesised to have some effect. These variables were the assets of the acquiring company, the assets of the acquired, the length of time in months during which the merger had had a chance to affect the concentration ratio, and the average level of concentration (the initial concentration level plus the final concentration level divided by two). None of the coefficients of the regression were found to be significant either when the measurement of concentration was the 4-firm concentration ratio or when it was the 8-firm concentration ratio. Hence, the author concludes that the evidence does not support the argument that conglomerate mergers affect concentration ratios in the industries of the acquired firms and therefore it is unlikely that competition in those industries be adversely affected by merger activity.

Stillman (1983) examined the merging firms rivals' share price in 11 horizontal mergers which took place between 1964 and 1972, and which were challenged by antitrust enforcement agencies. If the "market power" hypothesis was true - the author suggests - their share price should rise at the time of events that increase the probability of the merger, and fall when the probability of the merger declines Stillman found that rivals' share prices, on average, remain unaffected after the announcement of the merger. Similar results for a larger sample of horizontal mergers are reported by Eckbo (1983). Ghosh (2005), after examining more than 2000 U.S. acquisitions that were completed during the 1980s and 1990s, reports that although market concentration, as measured using the Herfindahl index, increases around acquisitions, the increase is economically small. The author found no evidence that acquisitions are motivated to increase industry concentration, and benefit from large monopoly rents.

2.2.8. The Price Earnings Ratio as an explanation of merger activity.

One of the most important indexes regarding the value and the future prospects of a firm is the *Price Earnings Ratio*, PE, for it embodies all the information about how the market assesses firm's future performance. A firm exhibiting an increase in earnings per share for a number of subsequent years tends to be valued more favourably than another, whose earnings per share have been rising with lower rates; that is the market probably extrapolates its past performance. The price of a firm's stock at a given time is a function of the earnings per share at that time and its PE ratio at the same time.

There is a body of literature – though not very rich – suggesting that merger activity may be motivated from the acquirer's management desire to increase the united entity's earnings per share and its share price by means of PE manipulation, choosing the appropriate target for this purpose. This argument rests on the fact that when an acquirer has a higher PE than that of the acquiree, there is an automatic increase in earnings per share and the share price of the acquirer immediately after the merger if the merger is transacted at the share price.

Steiner (1977) illustrates a simple arithmetic example to support the aforementioned argument. The author makes two assumptions; first, that the PE ratio of a particular company tends to become an established parameter and to change but slowly over time. Therefore, any increase in earnings per share of the firm leads to an increase of its stock price. In addition, the PE ratio tends to increase secularly if the rate of growth of earnings increases. Second, when a company 'A' acquires a company 'B' with a different historic PE ratio, then investors transfer the acquiring company's PE ratio to the acquiree's earnings. Supposing that firm 'A' has 2000 shares selling for £1 each and earnings per share of 0.05, the firm's PE ratio is 20. If company 'B' has 1000 shares selling for £1 each and earnings per share 0.10, then 'B's PE ratio is 10. In the absence of any synergy[50], a simple combination of 'A' and 'B' would suggest a company, 'A+B', with 3000 shares that sells again for

[50] Target's core business is assumed to be within an unrelated industry than that of the acquirer's.

£1 each[51]. Its earnings per share would be 0.067 (2000 x 0.05 + 1000 x 0.10 / 3000) and its PE ratio 15.

However, in case where firm 'A' acquires firm 'B' on a share for share exchange, the earnings per share of the acquirer immediately after the acquisition will be again 0.67 (since earnings per share as reported in the financial statements of the two entities do not change, regardless of the acquisition). However, these earnings are now converted by the stock market into a price per share based on company's 'A' PE ratio of 20:1. Thus, each share of the acquirer is now selling at a price of £ 1.33 (20 = P / 0.067). Indeed, the increase in company's 'A' share price is one of 33%, and that is a profit which resulted solely from the fact that the target company had a PE ratio lower than that of the acquirer[52]. Any other source of gain, such as synergy, was assumed absent since the acquisition is a conglomerate one.

Steiner suggests that the upward revaluation of the acquirer's share price (from £1 to £1.33) and its earnings per share (from 0.05 to 0.067) may further inflate the market's assessment of its PE ratio, since these increases are considered as favourable events for the firm. In any case, investors may speculate that such a performance will continue in the future, and this would justify an upward revision of its PE ratio. Assuming that PE ratio rises to 25, then the share price of the acquirer rises to 25 x 0.067 = £ 1.67. The author argues that while the rise of the acquirer's share price due to acquisition (from £1 to £1.33) is real enough and can be sustainable as long as the earnings per share of the two (merged) companies continue to rise in the future at levels pertaining at the time of the acquisition, the rise (to £ 1.67) that results from the speculative upward revaluation of PE is not sustainable in the future, unless the acquirer proceeds with another acquisition of a target with positive earnings and relatively low PE ratio (lower than its own). This is because the market's speculative assumption that the rate of earnings per share growth will increase in the future (which lead to the upward revision of PE and thus, the share price) is not reasonable in the absence of any synergy or other sources of real gains. In addition, sequential acquisitions of selective targets with lower PE ratio can not

[51] Company 'A+B' is the weighted average of company 'A' and company 'B'. Its share price would be (2000 x £1) + (1000 x £1) / 3000 = £1.

[52] It is assumed for simplicity that one share of the acquirer is exchanged with one share of the acquiree. If for example there was a 20% premium to B's stockholders there would be more shares (3,200) and the earnings per share would rise to 0.625 and the price per share to £1.25 instead of £1.33 (at a PE of 20).

last for ever, first because such opportunities would be exhausted after some time[53], and second, due to the probable market's revaluation of its assessments on such cases. The author says that the conglomerate merger wave of the 60's can be explained by the above mechanism, if it is taken into account that during that period acquiring companies tended to have significantly higher PE ratios than acquired companies, and that in the short run PE ratios did not fall after the acquisition.

Indeed, Levine and Aaronovitch (1981) in a study for 154 U.K companies that were involved in large mergers in 1972, find that one of the financial characteristics that discriminates between acquirers and targets is the PE ratio. Acquirers were found to have on average higher P/E than both the targets and the sample average[54].

However, Newbould (1970), in a study referring to the conglomerate merger wave of the late 60's, notices that there are reasons to doubt as to whether the PE ratio is a sole, or even a prime, consideration of the merger terms. Nevertheless, the author illustrates evidence suggesting that there was a widespread common view in the market that a firm should take over only firms whose price earnings ratio is lower than its own[55]. In addition, this point of view was re-enforced by the behaviour of the investors to apply the acquirer's PE ratio to the acquiree's earnings per share immediately after the merger.

Tzoannos and Samuels (1972), found that the higher the ratio the less likely for a firm to be a takeover target. This is consistent with the argument that since markets are very interested in price earnings ratio, companies seek to acquire others with a lower P/E in order to improve their own earnings position. However, there was no evidence found that acquirers have significantly higher price earnings ratio than the average.

The PE ratio approach for explaining merger activity may stand as an intuitively appealing one; however it seems unlikely that acquirers base their

[53] The sequential acquisitions of targets with low PE will lead to an increased competition for the remaining targets which in turn will lead to an increase of the acquisition price relative to their earnings.
[54] The other financial ratios examined in the study, were the valuation ratio and the size. Acquirers were found to be larger and with higher valuation ratio on average than acquirees.

[55]The author characterises this view as 'myopic' (p.80) since the positive revaluation of earnings per share and PE immediately after the merger are of a temporary nature.

decision for an acquisition exclusively on the expectation for share price increases resulting from the temporary upward revaluation of earnings per share and the PE immediately after the merger. While empirical investigation suggests that acquirer's take into account the possible benefits that may result from acquisitions of companies with relatively lower PE, acquisition decisions are costly ones, and even a management with short term motives would consider several other factors before the acquisition decision. On the other hand, sophisticated investors and analysts would not give credit to a management that proceeds to sequential acquisitions merely because the selected targets have a lower PE ratio. Steiner says that this may be a reason for the end of a merger wave, however, it sounds plausible that such managerial short-termism would have been discredited by market observers much faster.

2.3. Conclusions.

The main theories on motives were outlined in this Chapter. These can be summarised into two broad categories: first, to those assuming that acquiring firm's management acts in line with shareholders' interests and it proceeds with an acquisition because it expects to increase the firm's value through the realisation of synergies and the exploitation of cost economies, or alternatively because it holds positive private information for the target. In all these cases, the target firm has a unique value for a bidder's management who expect to take advantage of a 'value gap' between their and other parties' perceptions of the target's value. Second, to those which assume that, in light of the separation of ownership from control in the modern enterprise, acquiring management may follow its own objectives. These theories view acquisition activity as a resolution or a manifestation of agency problems. Growth-seeking managements may be motivated by the desire to achieve their personal goals rather than by shareholders' interest for profit maximisation.

The desire of an acquirer to increase market power and to exploit benefits that result from the increase in concentration in the industry which it operates was also discussed. Finally, the implications of the 'hubris' Hypothesis as an explanation of acquiring firm's purchasing behaviour was presented, and the Gort's economic

disturbance theory as an explanation of the variation of the number of takeovers through time was outlined.

It must be noted that with the exception of Gort's economic disturbance theory, all other theories discussed in this Chapter infer the motives for M&As from their consequences. The effects of M&As on firm's performance are discussed in the first part of the next Chapter.

CHAPTER 3.

THE EFFECTS OF MERGER ACTIVITY: ANALYSIS AND RESEARCH QUESTIONS.

3.1. Introduction.

In the previous Chapter the motives driving merger and acquisition activity were discussed. Several theories that attempt to answer the question 'what causes mergers and acquisitions?' were described. In general terms, most of them regard the consequences of M&A activity as the driving factor behind the acquisition decision[1].

In this Chapter the analysis is focused on the economic effects of M&As. In fact, there are many sets of stakeholders that may be affected by changes in firm combinations implemented through M&As. Firms' shareholders, employees, consumers, competitors, suppliers and creditors are all groups of stakeholders that have economic interests in the deal, as well as local communities and the government. The outcome of M&A activity therefore, is of relevance to a wide range of interests; private and social ones. Social interests that may be influenced by M&A activity can be seen as those relevant to social welfare, such as the degree of concentration and monopoly power in industries, the growth of national productivity and competitiveness, the development and transfer of technology and the implications for taxpayers. While undoubtedly all of these issues are of great importance in the context of the economic life of a society, the focus in this study is on the consequences of M&As for the two sets of individuals which are directly affected; the owner-shareholders and the employees[2].

The structure of this Chapter is as follows: In Section 2 the empirical evidence on merger performance that is derived from share price studies is discussed

[1] Gort's (1969) Economic Disturbance Theory and Roll's (1986) Hubris Hypothesis obviously do not regard merger consequences as a motivating factor behind mergers and acquisitions.

[2] It is often difficult when considering the effects of mergers on private interests to precisely distinguish between private interests and social interests. For example any possible wealth transfer from employees to shareholders due to mergers may be considered as an influence on the private interests of the two specific sets of individual stakeholders. However, the possibility of the elimination of jobs due to downsizing or the creation of new ones due to innovation and an increase in competitiveness have definitely ancillary consequences affecting local communities and society in general.

in six sub-sections. In the first, we discuss the evidence from short-term event studies for the U.S. and in the second the corresponding evidence for the U.K. In the third sub-section we discuss the evidence which results from share price studies that examine the combined returns of the acquiree and acquirer. In the fourth the empirical evidence from long-term event studies for the U.S. is illustrated while the corresponding evidence for the U.K. is discussed in the fifth. Finally, in the sixth sub-section an evaluation of the overall evidence from share price studies is made. In Section 3 of this Chapter we outline the empirical evidence on merger performance that is derived from accounting studies for the U.S. and the U.K. Finally, in Section 4 we address and discuss the research questions of this work.

3.2. The Evidence on Merger Performance Derived from Ex-ante Studies.

The available empirical evidence on the effects of mergers on corporate performance comes mainly from two basic types of large sample studies; event studies and performance studies[3]. Event studies focus the analysis on a day-window around the date of the takeover announcement and examine the presence of any possible abnormal returns on firm's equity in the light of the new information released and the perceived prospects of the merger. Daily abnormal returns are calculated by adjusting daily raw returns for what investors required that day. In simple words, daily raw return is the change in share price that day plus any dividend paid, divided by the closing price of the previous day. Then, daily abnormal returns result from the subtraction of a benchmark that represents the rate of return that is expected to have occurred if the announcement had not been made. The benchmark returns are usually determined from the market model. These studies provide evidence of expected post-merger corporate performance, assuming that stock markets are efficient and that share prices are determined as the present value of the expected future cash flows to shareholders; therefore, they are considered as 'forward looking' or 'ex-ante' studies.

[3] Large sample empirical studies also include survey-based studies that investigate the effects of M&As by exploring the views of managers who were involved in takeovers. The focus of this study, however, is on evidence that is derived from accounting and share price quantitative data.

Performance studies are more straightforward studies in the sense that they base their analysis on the actual post-merger financial data of acquiring firms as they are reported in accounting statements for a period after the merger. These studies usually examine rates of profitability, cash flows, returns on assets and equity, the earnings per share and other financial indicators of the firm before and after merger. The performance benchmark consists of estimates of the firm's performance if the acquisition had not occurred. These estimates often take the form of the performance of a portfolio of firms belonging to the same industry that have not engaged in merger activity in the period of examination. In some methodologies this performance benchmark consists of firms of similar size and industry as that of the merging firms. Researchers then examine whether merging firms outperform the benchmark.

Firstly, we will consider short term event studies which are characterised by returns being calculated on a daily basis where the estimation period is typically up to 120 days before the announcement and the event window is up to 120 days after the announcement. Secondly, I will consider long term event studies.

3.2.1. The Empirical Evidence from Short-Term Event Studies.

The overall empirical evidence from short-term event studies is consistent and provides support for the view that corporate acquisitions increase corporate value. Shareholders of the target firm capture the lion's share while acquiring firm's shareholders either capture small benefits or even experience small losses. The gains to bidders on average have declined over time while the opposite trend applies to target firms.

Jensen and Ruback (1983) averaged the results of about twenty empirical studies and found an increase of target firm abnormal returns of 20% for mergers and 30% for tender offers after the announcement. The empirical evidence for bidding firms was less clear. In some studies results were positive while in others, negative. Roll (1988) reports that different papers have found different results for bidders because methods, time periods, and samples of firms vary across studies, making it difficult to draw conclusive inferences. However, whether bidding firm price

movements are positive or negative on average, they are generally small in percentage terms – much smaller than target firm returns – and are less statistically significant.

Asquith (1983a) analysed the abnormal stock price performance of 196 NYSE firms that engaged in merger bids. The author reports that while bidders of both successful and unsuccessful bids realised significantly positive abnormal returns during the pre-announcement period, they exhibited insignificant excess returns, either positive or negative, in the period of the merger outcome. On the day of the merger announcement, both successful and unsuccessful bidders had positive but insignificant excess returns. During the interim period (from the announcement day to the outcome day) bids which were successful exhibited insignificantly negative abnormal returns, while for mergers that did not come to be consummated, high significantly negative abnormal returns were realised. An interesting finding of this study is that in the post outcome period both successful and unsuccessful bidding firms had negative abnormal returns of high statistical significance.

The results for target firms, both successful and unsuccessful exhibit positive and significant excess returns on the press date and the date before. In the interim period from the announcement date to the day of outcome, there are significantly positive excess returns for successful targets[4] while for unsuccessful ones, the case is exactly the opposite (the excess returns are +8% in the former case and –8.1% in the latter).

Asquith suggests that the results are consistent with the hypothesis that the target firms have unique resources which provide synergy when combined across firms. There are stockholder gains associated with a merger bid and these gains increase as the probability of the merger increases and decrease as the probability of the merger decreases. Most of these gains go to stockholders of the target firms with the stockholder of the successful bidding firms earning little if any return. According to the author, a possible source of the merger gains is the inefficient management of the target firm. If a firm's resources are underutilized, this information is reflected in its stock's price. If the firm is acquired and more efficiently managed, positive abnormal returns are generated. This is consistent with the fact that prior to the bid

[4] The term 'successful target' is means that the takeover is finally realised.

announcement, both successful and unsuccessful target firms display positive average cumulative excess returns, since the stock market expects a better utilization of target's resources in the future.

Similar results for acquiring and acquired firms' share prices are reported by Dennis and McConnel (1986). The authors examined various classes of securities of both acquired and acquiring companies around the announcement dates in a sample of 132 mergers which took place over the period from 1962 through 1980. It was found that, on average, acquired companies' common stockholders, convertible and non-convertible preferred stockholders and convertible bondholders receive statistically significant gains in mergers. The acquired firms' non- convertible bondholders gain statistically insignificant positive or negative returns.

For acquiring companies' common stocks, the results are sensitive to the time period used to measure returns, while acquiring companies' convertible bondholders, non-convertible preferred stockholders, and non-convertible bondholders neither gain nor lose by a statistically significant amount following merger announcements. In addition, on average, there is no evidence that acquiring companies' stockholders lose.

The authors suggested that the results indicated that mergers, on average, are value-creating activities for combined firms and for both the acquired and acquiring companies individually. Dennis and McConnel argue that the finding that on average acquiring firms' stockholders receive negligible gains if any following merger announcements seems contradictory with the fact that acquiring firms' stockholders approve merger decisions and that managers pursue them. However, as the findings indicate, on average convertible preferred stockholders receive positive and statistically significant gains in mergers. Thus, some classes of security holders other than common stockholders reap a gain and that is sufficient motivation to pursue the merger.

Positive returns for bidders are also reported by Asquith et.al. (1983b) for a sample of 170 mergers which took place in the period from 1963 to 1979. The authors report statistically significant cumulative abnormal returns of 3.48% for successful mergers and a non significant cumulative abnormal return of 0.70% for unsuccessful ones on the day before and the day of merger announcement. Similar

results for bidders are provided by Malatesta (1983), and Wier (1983). The first reports abnormal returns of + 0.90% but they are not statistically significant on the day of the event announcement for a sample of 256 successful bidders, while the latter reports 3.99% not statistically significant cumulative abnormal returns on the previous day and the day of the event announcement for a small sample of 16 unsuccessful mergers.

Jarrell and Poulsen (1989) provide evidence from 461 tender offers that took place in the 60', 70's and 80's. The wealth effects on acquiring firms' shareholders were positive, 0.90% on average, and statistically significant. In the 80's, however, abnormal returns to acquiring firms were negative but indistinguishable from zero. The explanation provided by the authors for the relatively small wealth effect on acquiring firm stock prices is that the full wealth effects may not be observed at the time of the bid because they are disguised in other information or are a relatively small component of acquirer's wealth. Moreover, competition among alternative bidders ensures that any excess returns are realised by targets. The small negative wealth effect for acquirers that are observed in acquisitions which took place in the 80's, are attributed by the authors to the fact that advancements and innovations in financial markets and in defensive tactics on behalf of targets made competition among bidders more fierce.

Consistent evidence with that published in the 80's is available in more recent research. Loderer and Martin (1990) examined a sample of 5172 bidders that participated in mergers and tender offers between 1966 and 1984. The event period was from 5 days before the deal announcement in the Wall Street Journal until the day of the completion. The results indicate that corporate acquisitions benefit the bidding firm's shareholders in the majority of the cases and the returns are higher on average in large acquisitions and when the bidder is not a frequent acquirer. However, it is noticeable that wealth effects for bidders' shareholders are declining over time[5].

Smith and Kim (1994) found positive but not significant abnormal returns for bidders that participated in 177 tender offers[6] and, unsurprisingly, a statistically significant positive wealth effect of 30.19% for targets. Similarly, Schwert (1996)

[5] Segmenting the sample into three time intervals, the authors observe a statistically significant positive wealth effect of 1.72% and 0.57% for the periods from 1966 to 1968 and from 1968 to 1980 respectively, but an insignificant negative effect of -0.07% for the period from 1981 to 1984.

[6] The sample consists of both successful and unsuccessful tender offers.

indicated that in 666 mergers and tender offers, targets enjoyed a statistically significant positive wealth effect of 26.3% and bidders an insignificant 1.4%. Maquieira et al. (1998) examined wealth changes for 1283 publicly traded debt and equity securities of firms involved in 260 stock for stock mergers. Apart from bidding firm shareholders in conglomerate mergers who experience a statistically insignificant loss, all other major classes of debt and equity securityholders of both bidders and targets either breakeven or experience significant wealth gains[7].

Eckbo and Thorburn (2000) studied the wealth effect of takeovers in the Canadian market for corporate control for a sample of 1261 bidders and 332 targets which were listed on the Toronto Stock Exchange and which participated in takeover transactions that took place from 1964 until 1983. Both successful acquirers and targets enjoyed statistically significant abnormal gains of 1.71% and 7.45% respectively[8]. However, when the study was extended to examine 390 U.S bidders that acquired Canadian targets, the evidence indicated that bidding firms shareholders experienced negligible losses. Kohers and Kohers (2000) report 1.37% statistically significant abnormal returns for acquirer shareholders at the day and the day after of the announcement of 961 acquisitions that took place between 1987 and 1996 for firms belonged to high-tech industries where the transaction method was cash. They also examined 673 acquisitions in the same industries and for the same period that financed their transactions by stock and the acquiring firms' shareholders were found to experience a significant abnormal wealth gain of 1.09%. A study by Leeth and Borg (2000) provides evidence for 466 bidders and 72 targets in the period of the second merger wave, i.e., between 1919 and 1930. The average abnormal returns were 3.12% for bidders and 13.27% for targets, both statistically significant.

The empirical evidence considered so far indicates that acquirees' shareholders enjoy significant wealth enhancement at the days around the event announcement while the gains to acquirers' shareholders are positive but indistinguishable from zero. However, there are several studies providing evidence

[7] Specifically, targets were found to enjoy substantial gains in both non-conglomerate and conglomerate mergers as do bidding firm stockholders in non-conglomerate mergers. Bidding firm shareholders in conglomerate mergers experienced insignificant losses, while all other securityholders enjoyed significant wealth increases.

[8] The estimation period for abnormal returns is 5 years, or 60 monthly return observations preceding the announcement date. However, results are similar when the authors examine the wealth effects to shareholders in the two days following the takeover announcement

of substantial losses for acquirers' shareholders around the date of the event announcement.

Dodd (1980) reports that bidders experience statistically significant losses around the announcement of a takeover proposal regardless of the outcome of the deal. Proposal announcements for acquisitions which turned out to be successful resulted in negative abnormal returns of -1.09% for bidders at the previous day and the day of the merger proposal. The average cumulative abnormal returns from first public announcement through to the date of stockholders approval of the merger proposals was -7.22%. For cancelled mergers the respective figures were -1.23% and -5.50% both statistically significant. Target shareholders enjoyed high statistically significant abnormal returns in both successful and cancelled mergers.

Varaiya and Ferris (1987) illustrate statistically significant losses for a sample of 96 successful acquirers which participated in takeover activity in the period from 1974 to 1983. The average losses ranged from -2.15% when excess returns were measured during the previous day of the announcement to -3.9% when the calculation period starts from 20 days before to 100 days after the acquisition announcement. The authors suggest that overpayment is the cause of losses for the acquirers. Indeed, for 58% of the sample where the bid premium overstated the expected takeover gain the losses are as high as -14%, while for the rest of the sample where the bid premium did not overstate the expected gains positive returns were observed.

Negative abnormal returns for bidders around the merger announcement day are also found by Servaes (1991) and Franks et.al. (1991). Using a sample of 384 successful bidders that participated in tender offers between 1972 and 1987, the former reports significant losses of 1.07% measured from the date of the announcement to the day the target delisted or the takeover became unconditional, while the latter found insignificant bidder losses of -1.02% for bidders participating in a sample of 399 mergers and tender offers between 1975 and 1984 using an event window of 5 days. Similarly, Byrd and Hickman (1992) found negative and significant abnormal returns for the stock of 111 firms which participated in 128 tender offer bids from 1980 to 1987, during the day of the bid announcement.

A loss of bidders' stock value around the day of the announcement of a bid is also documented in more recent studies. Walker (2000) provides evidence for significant losses of -0.84% for 278 acquirers in the period from 1980 to 1996, measured for a 2-day window around the event announcement. Delong (2001) examined 280 acquirers[9] between 1988 and 1995. Measuring cumulative abnormal returns from 10 days before to the next day of the merger announcement, the author reports statistically significant losses of -1.68%. In a study of 64 bank mergers that took place from 1985 to 1996, Houston et.al. (2001) found that acquirers experienced significantly negative abnormal returns of -3.47%, measured from 4 days before until the next day of the deal announcement[10].

3.2.2. The U.K. Evidence from Short-term Event Studies.

The evidence from short-term event studies for the U.K. is similar to that in the U.S. The impact of acquisitions on shareholder value in the short term is positive for acquirees' shareholders and zero or small and negative for acquirers' shareholders.

Firth (1980), reports statistically significant cumulative abnormal returns for targets of 28%, and -6% and statistically significant cumulative losses for bidders in an event window of one month around the announcement of the proposal of the deal. The study refers to 486 acquisitions in the period from 1969 to 1975, and the benchmark for measuring abnormal returns was the market model. Similarly, Sundarsanam et.al. (1996) found 29% statistically significant abnormal returns for targets and statistically significant losses of -4% for bidders, using the market model as a benchmark for estimating abnormal returns that were calculated from 20 days before until 40 days after the event announcement – the sample consisted of 429 acquisitions.

Acquirer shareholders appear to experience zero returns in several studies of U.K. acquisitions. Franks and Harris (1989) found that bidders break even while targets enjoy significant returns of 22%. For a sample that consisted of 1445

[9] The sample consists of deals in which at least one party is a bank.
[10] Both Houston et.al. (2001) and Delong (2001) report high and statistically significant abnormal returns for targets; 20.80% by the former and 16.61% by the latter.

acquisitions in the period from 1955 to 1985 and an event window of one month, the authors used the market model to estimate abnormal returns and the results did not change substantially when the CAPM was employed. Limmack (1991) also used the market model to examine the share price performance of 462 U.K. acquisitions that occurred between 1977 and 1986. Using an event window of about three months[11] around the event announcement the author reports statistically significant abnormal returns for targets of 31.38% and slightly negative but indistinguishable from zero abnormal returns for bidders.

Higgson and Elliot (1998) report evidence that is consistent to that presented above. The cumulative abnormal returns for a sample of 830 bidders and targets that engaged in takeover activity between 1975 and 1990 were statistically significant at 37.5% for targets and almost zero for bidders. Abnormal returns for the 100 largest takeovers – i.e. for takeovers where the target's market capitalisation was at least 25% of that of the bidder's value one month before the bid – were about 31% for targets and zero for bidders. Returns were calculated for about a three month[12] window during the bid period. The benchmark model that was used for the measurement of abnormal returns was adjusted for size effects[13].

Cumulative abnormal returns for acquiring firms' shareholders were found to be zero by Baker and Limmack (2002) in a period of one month around the event announcement. The sample consisted of 595 acquiring firms in the period from 1977 to 1990 and the results were similar across a variety of eight different benchmark models. Sundarsanam and Mahate (2003) reported that the 519 bidders in their sample experience average losses ranging from -1% to -2%, depending on whether the benchmark is the market model or it is adjusted for size or book to market value effects. However these losses were statistically insignificant. Goergen and Renneboog (2004) examined the share price performance of 70 bidders and 66 targets that engaged in takeover activity between 1993 and 2000. The event window

[11] The event window was started at the beginning of bid month and ended at the end of outcome month.

[12] The bidder's and target's abnormal returns were calculated from the beginning of the month in which the announcement takes place until the end of the completion month; 90% of the takeovers in this study were completed within a three month period after the announcement month.

[13] Returns for each acquirer are computed using monthly data from the London Share Price Database. Returns are aggregated as the holding period abnormal return, which is the difference between the return to buy and holding the stock over the observation period and the return on the benchmark over the same period. The benchmark return is the return on an equal-pound portfolio of all firms in the acquirer's size decile in each period. Portfolios are rebalanced monthly.

was sixty days before and sixty days after the announcement of the acquisition proposal and the benchmark model for the measurement of the abnormal returns was the CAPM. The results indicated a statistically significant cumulative abnormal return of 29% for the shareholders of targets and an insignificant cumulative abnormal return of around -2% for acquiring firms' shareholders.

3.2.3. The Combined Empirical Evidence from Event Studies.

The above discussion may be seen as supportive of the general notion which prevails in a large part of the literature dealing with merger performance on an ex-ante basis: that takeovers do create value on average. The argument suggests that since the value enhancement for target shareholders is high and it is statistically significant, along with the general finding that acquirers either experience minor losses or they break even or in some cases they even realise gains, then on average the aggregate outcome of the takeovers is beneficial for shareholders. In efficient markets, where the free diffusion of information is quickly absorbed and assessed, the value creation potential of a takeover is reflected in share prices of the two parties on the days around the event announcement. However, the fact that acquirers are typically larger than acquirees raises doubts as to whether the actual money value for targets and bidder taken together is positive. The sum of the large percentage gain for target and the variable wealth change of acquirers do not necessarily yield a significant positive value.

Despite the crucial importance of this argument, research on the topic of the combined returns to shareholders of acquiring and target firms is not as rich as that which considers the wealth effects of takeovers for the two participating firms separately. Although a number of research papers provide evidence of positive combined returns on average, there is no unanimity on the research results. Moreover, where a positive combined return is the outcome of the examination, the evidence is often too weak to argue that the increase in wealth for both parties' shareholders is a definitely established fact.

In a study of 236 tender offers that took place from 1963 to 1984 Bradley et.al. (1988) report that the weighted average abnormal return to target and bidder

firms is a statistically significant 7.43% in the period of ten days surrounding the event announcement. However, 25% of the combined valuations were negative while 53% of the bidders realised negative returns. Similarly, in a study by Berkovitch and Narayanan (1993), while aggregate combined returns for targets and bidders were positive, in 23.6% of the sample cases the combined returns were negative with a mean loss of $146.5m; moreover, more than 50% of the sample bidders experienced losses. Servaes (1991) found that the combined returns for acquirers and acquirees in 384 mergers and tender offers that took place between 1972 and 1987 were significantly positive, but for 280 of the cases where only one bidder was involved in the acquisition the returns were indistinguishable from zero. In addition, for 142 equity transactions abnormal returns were negative but insignificant. In a study by Houston et.al. (2001), the findings indicated significantly positive combined abnormal returns for 58% of the sample (bank mergers implemented from 1991 to 1996) while for the rest of the cases returns were indistinguishable from zero (bank mergers implemented from 1985 to 1990).

Nonetheless, Franks et.al. (1991) report significant and positive combined returns as do Kaplan and Weishbach (1992), Smith and Kim (1994), Mulherin and Boone (2000), and Bhaggat et.al. (2005).

In an earlier study, Firth (1980) studied 434 U.K. acquisitions that were implemented from 1969 to 1975. The author measured the change in market capitalization of the bidder firm and target firm from one month before the first offer to the month of the acceptance of the successful offer[14]. The results indicated that 350 out of the 434 acquirers experienced losses while only 3 out of the 434 acquirees realised negative gains. More importantly, in more than 50% of the cases the combined outcome of the acquirers and the acquirees was negative[15], and the total change in market capitalization of all the firms in the sample was negative[16].

In summary, despite an extensive literature on the subject of merger profitability that is implemented by means of short-term event studies, the issue of whether acquisitions create value for the participating firms' shareholders is still

[14] The period includes revised and counter offers. In cases where the acquirer held a pre-acquisition share stake in the target firm the gain to the shares of the target firm already held by the acquirer firm were deducted from the target firm gain to avoid double counting.

[15] In 224 out of the 434 transactions the combined market capitalisation of the two firms engaging in acquisition activity was reduced.

[16] Acquirers realised equity decreases of £1,140.2m and acquirees experienced gains of £1.103.6m.

unclear. In fact, there is strong evidence that the targets outperform the market as soon as the intention of a takeover bid is revealed by an acquirer but it is far from definitely established that the two firms together enjoy substantial gains due to acquisition. At least, the size differential between targets and bidders in most of the cases does not allow us to draw conclusive inferences about the actual money value for shareholders in a deal where the target experiences significant gains and the bidder faces insignificant losses.

Clearly, there is evidence for positive returns in a number of studies. However, even if we admit the prevalence of the strongest form of the market efficiency hypothesis, the market reaction to information that is elicited during an acquisition bid may reveal the market perception of synergies that are expected to be realised but this is by no means a warranty that during the integration process in the long-run, the synergy realisation will be successful[17]. The existence of the potential for synergistic gains is not the same thing as the realisation of them.

Market reaction at and around the event announcement days is justified by the information investors have in hand at this point in time. In the short-run more information becomes available about the terms of the transaction and any initially obscure points of the deal. In addition, inside information possessed by bidder's management about the worth of the target and the potential for its assets to be more productively deployed will be widely diffused. Thus, one expects positive valuations regarding a good deal to be upgraded well after the announcement. In the mid- and long-term, the capability of the two organisations to be successfully integrated will also be re-evaluated by the markets.

3.2.4. The Empirical Evidence from Long-Term Event Studies.

Due to the inconclusive evidence from the short-term event studies and the ambiguity of the results that are based on research of share prices behaviour for a small number of days surrounding the acquisition announcement, research has focused on the examination of merging firms' equity behaviour over longer periods

[17] In Chapter 2 of this study there was extensive reference to circumstances where expected synergistic gains may fail to be realised.

after the announcement or the completion of the transaction, so as to better evaluate merger performance by capturing the capital market's perception about the deal when more information is available. In addition, the full effects of an acquisition may take several years to occur and during this period expectations by investors will change. This type of research - long-term event studies – extends the period of the examination to one to six years after the announcement of the deal or - some others - after the completion of it and the returns are typically calculated on a monthly basis.

The evidence from the vast majority of long-term event studies is consistent and negative as far as the share price performance of the acquirers is concerned. Langetieg (1978) examined the share price performance of 149 successful acquirers which engaged in merger activity from 1929 to 1969, for 72 months after the completion of the merger[18]. The author reports significantly negative abnormal returns of -6.59% for the consolidated firm in the first year, statistically significant abnormal losses of -5.64% for the second year, while from the 25th month to the 70th month after the merger completion the consolidated firm experiences significant losses of -13.9%[19].

Similarly, Asquith (1983) reports significant losses of -7.20% for 196 successful acquirers that participated in merger activity between 1962 and 1976. The period of study extended from the date of merger approval until 240 days afterwards[20]. The author also examined the price behaviour of acquirers in the period between 480 and 20 days before the event announcement in the press. The findings indicate positive and highly significant abnormal returns of +14.3% in that period. According to the author, these results show that not all of the entire market reaction to a merger bid occurs at the time of announcement.

Conflicting evidence to that provided by Asquith regarding the pre-merger returns of acquirers is reported by Malatesta (1983). In the period of 61 months ending with the event announcement acquiring firm stockholders suffered

[18] 90% of the mergers in the sample took place after 1950 and over 60% of them took place after 1960.

[19] The results are based on Jensen's (1969) performance index based on the Sharp (1964) and Lintner (1965) version on the Capital Asset Pricing Model which requires the existence of a riskless asset, adjusted for industry returns. To test whether the measured excess returns are due to the merger or, alternatively some external influence other than the market and industry influence, the author incorporates in the model a non-merging well-matched control firm as a third factor. Results remain negative with all measurement methods.

[20] In the same study, the share price behaviour of 89 unsuccessful acquirers was also examined for the period starting at the date the result of the proposal became available to the press and for 240 days afterwards. Unsuccessful acquirers experienced significantly negative abnormal returns of -9.60%

statistically significant wealth losses. Regarding the post merger performance of the 121 acquiring firms in the sample that engaged in mergers from 1969 to 1974, the monthly cumulative abnormal returns were negative and statistically significant at -2.90% in the year following the merger approval[21]. The 59 acquisitions that took place after 1970 caused significant losses for the acquirers of -13.7% in the year following the merger[22]. The author asserts that market inefficiency is an unlikely explanation for negative abnormal post-merger returns to acquiring firms since in that period information concerning mergers was already widely disseminated.

Franks et.al. (1991) suggest that the estimated long-term performance of acquirers depends on the benchmark that is used for the abnormal returns estimation. The authors examined 399 successful acquirers, in respective acquisitions that took place from 1975 to 1984, for three years after the acquisition completion date and they report findings that range from significantly positive to significantly negative, depending on the benchmark that is used for the measurement of the abnormal returns.

Agrawal et.al. (1992) examined the performance[23] of 765 mergers that were implemented between 1955 and 1987, for 5 years after the completion of the deal. The results indicated negative statistically significant abnormal returns for the united entities of -10.26%[24]. The authors assert that the results reported by Franks et.al. (op.cit.), of positive post-outcome bidders returns were a function of the time period selected for study. In contrast, Loderer and Martin (1992), after examining the post-acquisition performance of 1298 acquirers which engaged in mergers and tender offers from 1966 to 1986, concluded that M&As are not a wasteful activity in the sense that acquirers do not underperform a control portfolio[25] during the five years following the acquisition. In fact, the authors discover an insignificant average of 1.5% abnormal return for acquiring firms. The statistically insignificant finding is

[21] Only the sub-sample of the 62 acquirers with a total equity value greater than $300m as of 12 months before the approval announcement exhibited significant positive abnormal returns in the year following the merger approval. The 59 acquirers with total equity value of less that $300m, as of 12 months before the approval announcement, experienced significant losses of -7.7% in the year following the merger approval.

[22] The author tested the share price behaviour of acquirers after 1970, since Schipper and Thompson (1983) provide evidence that regulatory changes occurred during the period 1967 – 1970 were associated with negative abnormal returns to firms which had previously announced acquisition programmes.

[23] The authors measure abnormal returns by first calculating abnormal performance of individual stocks by using the Dimson and Marsh (1986) procedure, then averaging the abnormal performance across all firms in an event month, and finally adding the monthly performance over 60 months.

[24] In the same study, tender offers exhibited returns that were not statistically different from zero.

[25] Both Agrawal et.al. (1992) and Loderer and Martin (1992) adjust for firm size and beta risk.

interpreted by the authors as being satisfactory for investors who earn the required rate of return. However, for the first three years after the acquisition the authors report some negative performance for acquirers, especially during the 1960's and 1970's.

The evidence from some newer studies indicates that acquirers that participate in successful tender offers outperform the set benchmarks over a long period after the deal, while the outcome for firms that participate in mergers is negative. Loughram & Vijh (1997) report that in an overall sample of 947 deals that took place from 1970 to 1989, acquirers that make merger bids earn on average 15.9% less than matching firms[26] whereas acquirers that make tender offers earn 43% more than matching firms during a five year period after acquisition. The authors also report that the method of financing the acquisition affects the results. In detail, the 5-year post acquisition abnormal returns for merger offers that were financed by stock is a significant -25% and the 5-year post acquisition abnormal returns for tender offers that were financed by cash is a highly significant +61.3%. According to the authors, the large abnormal returns in the post-acquisition period are an indication of market inefficiency. Markets systematically overestimate or underestimate efficiency gains (or losses due to inefficiencies) from acquisitions.

Rau and Vermaelen (1998) assert that, in contrast to short term event studies the long term event studies are sensitive to the model that is used for the computation of normal returns, and thus, conflicting evidence such as that provided by Agrawal et.al. (op.cit.) and Loderer and Martin (op.cit.) may be due to this sensitivity. Based on Fama and French (1992) evidence that beta does not capture much of the cross-sectional variation in average stock returns, the authors examined abnormal returns of acquirers that participated in 3169 mergers and 348 tender offers using a benchmark of control firms that are adjusted not only for size and beta risk but also for market to book ratio. Fama and French (1993, pp.54) conjecture that acquiring firms might tend to be large, successful firms with low book-to-market ratios and therefore a methodology controlling for the below-average returns of low book-to-market firms would reveal no persistent negative abnormal returns. The results are consistent with those provided by Loughram & Vijh (op. cit), suggesting that on

[26] Abnormal returns are measured by calculating the difference between 5-year holding period returns of sample stocks and matching stocks (chosen to control for size and book to market effects).

average acquirers in mergers underperform control portfolios by a statistically significant 4% over a period of three years after the merger completion date, while acquirers in tender offers earn a statistically significant 9% on average. A possible explanation for this difference in performance between mergers and tender offers is that since tender offers are more often hostile acquisition proposals – as compared with mergers - leading to the replacement of the incumbent management teams of the targets, the realised gains could be expected to result from managerial efficiencies after the appointment of a new management team.

Moreover, the authors argue that glamour acquirers which are firms of superior past performance both in terms of stock returns and cash flows are more likely to be managed by management teams that are infected by hubris. Such firms tend to have low book to market ratios (Lakonishok et.al, 1994). Management and decision makers, taking positive feedback from the markets strengthen their own beliefs about the correctness of their decisions. In addition, markets over extrapolate past performance of the bidder when they assess the value of an acquisition and large shareholders may give the management the benefit of the doubt and approve its acquisition plans. On the other hand, in firms whose management has a poor track record – such as firms with high book-to-market ratios – managers, directors and large shareholders will be more prudent before approving a major transaction may determine the survival of the firm. Such acquisitions are not motivated by hubris and therefore it is more likely to create shareholder value rather than to destroy it. Indeed, the results of their study verify the authors' hypothesis. The authors report that value bidders far outperform glamour bidders in the three years after the completion of the merger or the tender offer. Value bidders earn statistically significant positive abnormal returns of 8% in mergers and 16% in tender offers, while glamour acquirers earn statistically significant negative abnormal returns of -17% in mergers and insignificant abnormal returns of 4% in tender offers.

3.2.5. The U.K. Evidence from Long Term Event Studies.

The U.K. evidence for long-term returns of acquirers is similar to that of the U.S. In general terms, the U.K. acquirers achieve value losses rather that value gains

with their acquisition strategy. The only study that reports break even for acquirers is that by Firth (1980). The sample consisted of 434 acquirers in the period from 1969 to 1975 and the event window was 36 months after the merger completion. Normal returns were measured using the market model. Using the market model as a benchmark for estimating abnormal returns, Franks and Harris (1989) report that the post-acquisition performance of 1048 successful bidders in the period from 1955 to 1985 was significantly negative in the 24 months following the date that the merger went unconditional. Specifically, in the first year bidders experience statistically significant losses of -4.8%, and during the two years the cumulative monthly abnormal returns are -12.6%. However, results prove sensitive to the benchmark used to measure normal returns. When the CAPM is used, monthly cumulative abnormal returns for the two years post-acquisition period are significant and positive at +4.5 %.

Limmack (1991) investigated the wealth effect of 448 mergers that took place from 1977 to 1986 on acquirers' share price in the 24 months following the announcement of the proposal outcome. His results are similar to those provided by Franks and Harris (op.cit.). For completed and abandoned bids there was a downward drift in returns over the whole period. Monthly cumulative abnormal losses for acquirers range from an insignificant -1.47% for successful bids and a significant – 10.10% for abandoned ones in the first year after the date the outcome of the offer was announced, to a significant -4.47% for successful bids in the two years following the announcement of the offer outcome and a significant -20.33% for unsuccessful bids in the same period[27].

Kennedy and Limmack (1996) studied the post-acquisition share price performance of 247 acquirers in the 23 months following the merger completion date. The overall size adjusted returns were negative, with bidders experiencing significant

[27] Reported abnormal returns were measured by using the Market Model as a control model for estimating normal returns. The author also used the Index Model that assumes an alpha of zero and beta of one. The analysis was also repeated using the London Business School Risk Measurement Service Betas (RMS). RMS Betas are estimated on the basis of regressing trade-to-trade security returns on the market returns observed over identical periods of time. All three models revealed the same pattern of negative returns for acquirers over the two year period following the outcome of the offer announcement date. In the same study, the investigation was also extended to the period before the event announcement and to the period between the event announcement and the date of the proposal outcome for bidders and targets. Despite the significant wealth gains experienced by targets' shareholders in the pre-bid period, the author concludes that the gains made by target company shareholders are at the expense of shareholders of bidder companies, and that there is no evidence of net wealth increase resulting from takeover activity in the period under examination.

losses of -4.92% during the second year and indistinguishable from zero returns during the first year after the merger completion[28]. Gregory (1997) criticises previous research work on post merger performance, by means of long term event studies, in the U.K. for not taking into account the book to market value effects in calculating normal returns. Gregory conducted a thorough analysis of the share price behaviour of 452 acquirers that made acquisitions from 1984 to 1992 by using six alternative benchmark models[29] to estimate normal returns. Controlling for size and book to market effects, the author discovered that the performance of acquiring firms is significantly negative in the two years following the acquisition completion. All six benchmarks that were used to measure normal returns provided the same negative pattern of post-acquisition performance. Results ranged from -3.83% to -9.28 during the first year after merger completion, depending of the benchmark used. During the second year, returns ranged from -3.40% to – 7.38%. An interesting element of this study was the examination of the cumulative monthly abnormal returns starting at the date of the offer announcement until 24 months after merger completion. The results capture the market's perception about the deal for a period that includes the intermediate months from takeover announcement to takeover completion. Returns are also significantly negative, ranging from -11.02% to -17.73% depending on the model used to measure normal returns. The author concludes that '*the post-takeover performance of U.K. companies undertaking domestic acquisitions is unambiguously negative, on average, in the long-run', (p.p.998)*. Commenting on Gregory's results, Limmack (1997, p.1006)) suggests that it would be '*premature*' to conclude that takeover activity in the U.K. is a wealth destructive action. Limmack wonders whether the results are time specific, since the sample is restricted to takeovers that happened in 1984-1992 period and, in addition, whether Gregory's benchmark models which control essentially for size and book to market effects are appropriately descriptive – the author suggests that '*whether there are other control models or methods which are more appropriate is an open question...*' (p.1006)

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[28] The authors used the Dimson and Marsh (1986) size-decile control method.

[29] The benchmark models used were the CAPM, the Dimson-Marsh risk and size adjusted model, the Simple size control portfolio, the multi-index model using equally weighted smaller decile minus large decile returns, the value-weighted multi-index using the Hoare-Govett Index as the measure of smaller company performance, and the Fama and French (1996) Value-weighted three factor model.

Contrasting evidence to that reported by Gregory is provided by Higson and Elliot (1998). The authors, after examining the price behaviour of a sample of 722 U.K. acquirers in the period from 1975 to 1990, and after controlling for size effects[30], discovered that acquirers show zero abnormal returns in the three years following completion. However, the authors report that acquisitions implemented during the period from 1981 to 1984 exhibited highly positive abnormal returns in the two years following completion, while for the rest of the period under examination the two-year post-acquisition performance was negative. The difference in performance between the three sub-samples of acquisitions is attributed to market conditions prevailing in the late 1970's and the late 1980's and early 1990's. Whereas the post-takeover period for takeovers completed in 1981 through 1984 was the period of the mid-eighties boom, the post-acquisition period for the rest of the sample coincided with periods of deep recession.[31]

Negative post-acquisition performance for acquirers is also documented by Baker and Limmack (2002). In a study that examines the performance of 595 acquirers in the period from 1977 until 1990, the findings indicate that the negative performance pattern in the five years following acquisition completion is present irrespective of the model that is used for measuring normal returns. Abnormal returns range from a significant -26% to a significant -31%. An interesting finding[32] of this study is that frequent acquirers suffer no significant wealth losses regardless of the benchmark model used and they consistently outperform single acquirers. This last finding suggests that managements tend to learn from past acquisition experience.

In a study concerning 519 U.K. acquirers in the period from 1983 to 1995 Sudarsanam and Mahate (2003) add evidence to the widely documented evidence of significant value destruction in U.K. acquisitions. Using a variety of alternative benchmark models, the authors report an average loss (across the various benchmark models) of -15% over a three-year post-acquisition period. Following the Rau and Vermaelen methodology that it used for the US, they report consistent results for the

[30] Abnormal returns are measured as the difference between the return to buying and holding the acquirer's stock at completion and the return to a benchmark portfolio of stocks of the same size as the acquirer.

[31] The finding of the time sensitivity of bidders' performance is consistent with Agrawal's et.al. (1992) assertion that Franks' et.al. (1991) mixed results of positive and negative post-acquisition bidders' performance in the U.S. were not due to different models employed but due to time specificity of the sample.

[32] Another interesting finding was that cash financed acquirers do not experience significant wealth changes in the five post-acquisition years, in contrast to acquirers that used a method of financing based on equity. Also, large acquirers experienced less wealth losses in comparison to smaller ones.

U.K. Specifically, the results based on Market to Book Value as a proxy for glamour acquirers indicated that over a three year post-acquisition period value acquirers outperform glamour acquirers. However, in the bid announcement period stock market investors do not seem to extrapolate the pre-bid performance of acquirers, which means that there is no difference in performance between value and glamour acquirers[33].

In a recent study, Gregory (2005) examined the long term share price performance of 217 UK acquirers that made an acquisition from 1984 to 1992, over a period of 60 months after the completion of the transaction. The results are substantial and significantly negative. Over a 36 month period after the merger acquirers seem to experience losses of -17.7% which increase to -19.9% after 60 months from merger completion[34]. A very interesting finding of the study is that acquirers with high free cash flow outperform acquirers with low free cash flow which implies that Jensen's Free Cash Flow hypothesis does not hold for U.K. firms[35]. However, whilst the difference in returns between acquirers with high free cash flow and acquirers with low free cash flow is substantial, it is only significant at the 10% level.

3.2.6. Evaluating the Evidence of Event Studies.

Despite the numerous studies devoted to the examination of merger profitability by means of event study methodology, the empirical evidence on this issue is still equivocal. The question of whether M&A activity does properly serve the private interests of shareholders cannot be answered with certainty. Nor does the extensive examination of share price performance of firms engaging in such activity support the view that mergers are adequately explained by a profits maximization assumption. The only established fact is that target firm's shareholders earn high abnormal returns during the bid period. While this could be explained by a market

[33] The results indicate that acquirers experience significant losses in the region of -1.4% at the time of the bid announcement.

[34] Abnormal returns are measured using control portfolios adjusted for size and book to market ratios. Reference portfolio returns are calculated using the 'buy and hold' method as described in Lyon et.al., 1999 p.169) with returns being value weighted.

[35] In contrast, Lang Stulz and Walking (1991) report evidence indicating that Jensen's Free Cash Flow hypothesis holds for the U.S. However, in this study the authors used announcement period returns.

expectation for more efficient usage of the acquiree's assets and resources, it also seems consistent with the anticipation of a – usually generous – premium. Acquirers usually earn insignificant positive or insignificant negative abnormal returns in the period around the bid announcement. In some studies, however, acquirers appear to experience statistically significant losses.

The highly positive announcement returns of target firms' shareholders along with the acquiring shareholders' almost break even position some days after the acquisition proposal would suggest that the overall result is positive or at least, shareholders on aggregate, receive the required rate on return from their investment, even if there would be a transfer of wealth from acquirer shareholders to acquirees' shareholders during the announcement period. However, the fact that acquirers are larger than acquirees in the vast majority of the transactions imposes doubts as to whether the higher percentage returns of acquirees' shareholders can offset the smaller percentage losses of acquirers in terms of actual profitability. Although studies attempting to investigate the issue by examining the combined returns for targets and bidders during the bid announcement period provide some confirming evidence for positive combined returns, they are not conclusive; at least, the evidence is not adequate to support the notion that merger profitability is definitely established.

On the other hand, studies that use long-term event study methodology provide consistent evidence - with very few exceptions - that acquirers, on average, experience significant losses in comparison to similar non-acquiring firms or the market. The losses vary substantially, depending on the benchmark model that is used to estimate normal returns against which abnormal performance is measured. There is also some evidence that some types of acquirers – such as those that engaged in tender offers, those that finance the acquisition by cash or the so-called 'value' acquirers - perform better than the others or even that they enjoy some gains in the long run.

The general view about merger profitability that is derived from short term event studies is more optimistic than that which is derived from long term ones. The question that arises then is whether stock markets overreact to the possibility of efficiency gains at the time of proposal announcement – which implies the existence of market imperfections – and whether they revise their evaluation as they digest

additional information at the time it becomes public[36]. Or do the markets correctly evaluate the potential for synergy and efficiency gains at the time of merger announcement which during the integration period fail to be realised?

In the first case the implication is that stock markets are not efficient and takeovers are not, on average, in the interests of bidding firms' shareholders. Managers act according to their private interests with destructive consequences for shareholders wealth. Stock markets then react with a large time lag. As Limmack (1997, p.1006) says, such an argument is '*easiest to state but most difficult to swallow*'. In the second case, managerial motives are in line with shareholders' best interests and acquisitions have a real potential to be profitable. Efficient stock markets react positively at the announcement reflecting the expected gains that will result after the completion of the deal. However, in many cases the difficulties of the integration may be underestimated during the acquisition projections on behalf of acquiring management or the acquiring management may overestimate its own capabilities to lead such a difficult task. But if this is the case why do stock markets not adversely react when the deal is announced? After all, in the light of the disappointing evidence derived from the long term event studies one might ask why large sophisticated shareholders of bidding firms approve acquisition decisions and bear high transaction costs if they do not expect to earn a positive return.

In summary, the evidence regarding merger profitability that is derived from the examination of the share price behaviour of acquirers and acquirees is still perplexing despite the large volume of academic papers that have been published on the issue. The short term share price performance of bidders and targets provide a positive view on the subject and the overall impression is that M&As enhance the profitability of targets while bidders experience negligible losses or gains. On the other hand, the majority of studies that examine the long term performance of acquiring firms' stock provide a pessimistic view about merger profitability. Acquirers' shareholders usually experience, on average, statistically significant losses in the three to six years following the merger completion. Whether this is due to a stock market anomaly or because mergers can be profitable in their theoretical

[36] There is a rich body of literature in the relatively new field of 'Behavioural Finance' suggesting that markets are imperfect, or at least less 'responsive' than the Efficient Market Hypothesis' suggests. See for example Thaler (1993), Campbell & Shiller (1998), Shleifer (2000), etc.

planning but profitability improvements prove difficult to implement is an unanswered question from event studies. On top of that, the endogenous methodological problems of event studies leave little space for drawing general inferences about whether merger activity on average is profitable or not. Therefore, the attention of a thorough researcher should turn to studies that examine the actual merger performance, using accounting data

3.2.7 Stock Price Studies Vs Accounting studies

The two major literature strands that deal with merger performance – namely, stock-price studies and accounting studies – are based on different assumptions and provide different results.

Short term event studies are based on the assumption that stock markets are efficient and, therefore, the information that is released with an acquisition proposal is very quickly incorporated in the stock price of the acquirer and acquiree. The sign and the magnitude of any stock price change indicates the evaluation of this information on behalf of efficient stock markets. Thus, under the efficient market hypothesis, share prices reflect the net present value of the synergistic and/or efficiency gains that will be derived from the prospective merger at the time of the bid announcement. However, the few days window around the announcement is often not adequate for an unbiased evaluation of all information concerning a prospective deal. Additional information about the details of the transaction, the possible benefits as they have been projected by the decision makers, the existence of the necessary capabilities for a successful integration, and competitors' reaction to the merger are all issues that become publicly available for evaluation as time passes. Thus, research turned to the examination of the share price performance of the united entity for a long period – usually three to six years – after the consummation of the merger.

Following the long-term event study approach, extending the time period in which an acquirer's share price is examined for several years after the completion date, allows one to capture the impact of events related to the merger which cannot be captured within a few days interval around the announcement. However, it is

more likely than not that during this time span other events and major corporate decisions unrelated to merger – such as strategic or operational or financial policy changes – will have an impact on corporate value and the firm's share price. For example the conglomerate merger wave in the U.S. of the sixties was followed by an extensive divestiture activity. Examining share price performance of the sixties' conglomerate acquirers for several years, entails the 'side effect' of measuring the impact of the divestitures that followed. The longer the time period of examination the greater the chances of incorporating the impact of unrelated events into the results.

Another problem with long term event studies refers to the benchmark model. Because the length of such studies extends to several years after merger completion it is possible that changes to the strategic or other orientations of the firm happen during the examination period. Therefore control firms are initially chosen on the basis of similar characteristics to those of acquiring firms may not be the appropriate basis for comparison after such changes have taken place. If for example the CAPM is the selected benchmark, then two firms with similar betas are expected to earn the same returns. However, an acquirer's risk profile may substantially change after a strategic takeover[37]. Then, the benchmark is no longer valid unless it undergoes a similar transformation. In addition, the comparison of results between studies is difficult because some studies assume normality of statistical distributions of stock returns and use parametric statistical tests while others use non-parametric tests assuming that stock returns are skewed.

Accounting studies examine the operating, rather than the stock market returns-based, performance of merging firms in order to get additional insight into the impact of acquisitions. Companies usually, when announcing an acquisition strategy, refer to the enhancement of competitive advantage by improving revenues, profits, cash flows and reducing costs. Therefore, the direct examination of these variables provides for the estimation of the actual impact of the acquisition on firm's performance, in contrast to stock returns studies which measure indirectly the success or failure of acquisition strategy relying exclusively on what investors think about the firm. After all, share prices may often be affected by other factors than

[37] A horizontal or a vertical acquisition may alter the market share or the cost structure of the firm and consequently its earnings volatility and its risk profile.

company's expected performance such as market swings, fads and euphoria[38]. Controlling for these factors through a research design that adjusts for a variety of benchmarks, still leaves open the possibility that share price movements often do not reflect the underlying performance of the company. Moreover, unlike accounting studies, share-price studies do not offer an explanation as to where possible improvements come from.

Therefore, while admittedly no research model can assimilate and describe reality perfectly, we believe that accounting studies are more reliable in drawing inferences about merger performance.

3.3 The Ex-Post Evidence from Accounting Studies.

Ravenscraft and Scherer (1987), in a study for the U.S., examined operating performance in 1974 to 1977 for 471 firms acquired between 1950 and 1977 using accounting profitability[39]. The performance measure was operating income, before deduction of interest charges, extraordinary items, and income taxes to end-of-fiscal year assets. The results indicate a significantly negative relationship between return on assets and tender offer activity. Specifically, while pre-takeover profitability of target companies was negligibly below industry norms, post-takeover performance of targets exhibited a significant decline of 3.10% in relation to other industry firms that had not engaged in acquisition activity, over the years 1975 to 1977. Where purchase accounting was applied performance was worse than where the pooling of interests accounting rules were applied. The decline in post-acquisition performance was attributed by the authors to the premiums paid to reflect prevailing stock market values and to induce target firm shareholder and/or management acquiescence. Under the purchase accounting rules that were adopted in most tender offers the acquired assets were written up to reflect the value of premiums paid over pre-acquisition book entries, and consequently, the denominator of performance metric

[38] Advancements in the field of behavioural finance have posed challenges to the assumption that stock markets are always efficient, see Thaler (1993), Shleifer (2000).

[39] The authors obtained financial performance data for 2732 lines of business (LBs) from the Federal Trade Commission's Line of Business programme. Among them, 153 manufacturing LBs had a tender offer acquisition history including 46 LBs affected by hostile tenders unsuccessfully opposed by incumbent management and 44 LBs acquired by 'white knights'. The remaining 2579 non-tender lines served as a control group.

was increased. When the ratio of cash flow (i.e. the operating income before the deduction of depreciation) over sales is employed as a performance metric, the target's performance in the three years under examination was negative but statistically insignificant. The authors conclude that the slightly inferior pre-takeover profitability of targets relative to their industry peers along with the significant post-acquisition decline in their performance, do not support the hypothesis that takeovers are directed toward displacing inefficient managers and that takeover activity is an efficiency-increasing mechanism.

Herman and Lowenstein (1988) examined 56 hostile tender offers that were initiated in the years from 1975 to 1983. Targets' return on equity in the five years preceding the first bid was remarkably good; targets on average earned about as much as their industry peers in the early years before the bid announcement while they earned substantially more in the two immediate years before the bid. Therefore, as did Ravenscraft and Scherer (op.cit.), the authors argued that such a pre-bid performance was not a typical one for firms that are underutilizing their resources, and that the inefficient management displacement hypothesis then, did not seem to be a primary reason for hostile takeovers. Moreover, the authors reported that bidders in the early pre-bid years enjoyed returns on equity which were good – approximately 10%, with the respective return for American nonfinancial firms being about 13% in the same period- but not quite as good as those of the target firms. In the two years before the bid acquirers exhibited an improvement in their returns but not at the same magnitude as that of targets[40]. The comparison of pre- and after-takeover performance of bidders indicated a non significant average improvement after the takeover.

However, when the examination of bidders' post acquisition performance took place for two distinctive sub-samples, one for the earlier bidders (1975 to 1978) and one for later bidders (1981 to 1983), the results showed remarkable differences between the two groups. While the two groups of bidders exhibited similar rates of return on equity in the pre-bid years, i.e. steadily rising returns, after the takeover earlier bidders continued to enjoy the steady improvement in profitability that they

[40] The authors argue that comparisons of the profitability of bidders and targets ought to be more favourable to the bidders, if bidding firm's managers owned superior capability to more efficiently utilise assets than target firm's managers.

enjoyed before the bid. For the earlier group of bidders the return on equity grew from about 14% in the year before the bid to 16% in the third year after the bid and about 17% in the fifth year after the bid. In contrast, the later bidders experienced a dramatic deterioration in the two years following the takeover. Like the return on equity of the earlier bidders, the return on equity of later 1981-1983 bidders was about 14% in the preceding year of the bid. In the first two years after the acquisition of the target company, however, the return on equity fell to an average of less than 9%, and interestingly, the larger the bidder the worse the results. It is also noteworthy that the later group of bidders acquired targets with return on equity which was almost twice as much as that of the targets which were acquired by the earlier group of bidders in each of the five years preceding the bid. In addition, in each of the three years preceding the bid earlier bidders acquired targets with lower rates of profitability than their own, while for the later bidders the case was the opposite. The authors argued that the difference in performance between the two groups was due to the diminishing opportunities in the market for corporate control over time. Finding an opportunity the innovators exploit it with success. But since the supply of attractive opportunities was limited, when others sought to imitate that success, investments deteriorated. Earlier bidders were able to find targets with lower rates of return than their own and yet achieve for the combined operations better rates of return than those they experienced before the acquisition, maintaining their upward momentum. With the passage of time results were reversed since the speculative aspect of the tender offer activity came to overwhelm the original economic rationale.

Herman and Lowenstein's interpretation of their study results on the basis of exhausting opportunities for profitable hostile acquisitions within an arbitrary time period leaves space for questions regarding the general acceptance of their arguments. Profitable and non-profitable hostile takeovers also occurred before 1975 and innovators also existed after 1981. Correspondingly, acquirers in the sample may have learned from the experience of the before-1975 acquirers, and innovators after 1981 may have chosen their targets by applying different criteria than those applied by the successful acquirers of the 1975-1978 period. Moreover, while fads are a usual phenomenon in markets – the market for corporate control not being exempted – why should it be assumed that the 1981-1983 acquirers imitated successful

acquirers of the 1975-1978 period? Maybe another remarkable economic event, like that of the late 1970's oil crisis which substantially affected firms' profits and operations and the economy as a whole, might have caused the differences in the results.

Healy, Palepu, and Ruback (1992), in their seminal study, criticise Herman and Lowenstein (op. cit) for the performance measure they use to examine merger profitability. The return on equity measure does not control for differences in pooling and purchase accounting, methods of merger finance and, most importantly, the effect of common industry shocks. Moreover, post merger data are available only for two years for transactions made after 1979, a fact that limits the analysis to a small number of years for the later group of bidders (1981-1983). Healy, Palepu and Ruback also criticise Ravenscraft and Scherer's (op. cit.) study, by challenging the comparability of the results since the examination of post merger performance is taking place in the years 1974 – 1977 for firms acquired between 1950 and 1977 and therefore, post merger years are not aligned with merger. Additionally, the exclusive examination of the acquired firm's line of business is not sufficient for judging the post acquisition performance since synergistic gains may well have benefited other lines of business of the acquiring firm. Also, definitions of business segments may have changed after merger if acquirers restructured their operations.

Healy et.al. (op. cit), examined the post merger performance of the 50 largest acquisitions in the industrial sector, in the period from 1979 to 1984. The performance measure that was used was the operating cash flow return on assets, and the authors controlled for industry shock effects by using the respective industry performance of each acquisition as a benchmark. The study extended from five financial years prior to, until five financial years after, the acquisition completion. In the pre-merger years each pair of acquirer and target was treated as a unified firm by the usage of pro-forma accounting data. The results indicated a dramatic increase in cash flow returns on assets in the five years following acquisition completion. In each of the five pre-merger years, the median industry-adjusted cash flow return on assets of the combined targets and bidders in the sample was statistically insignificant, indicating the targets and bidders performed around their industry standards. However, in each of the 5 post-merger years, the merged firms

outperformed their industry peers by 3% in the first year, by 5.3% in the second year, by 3.2% in the third year, and by 3% and 2.5% in the fourth and fifth post-acquisition years respectively. All figures – except that referred to the fifth year – were statistically significant. The median annual performance of the combined firms in all the five pre-merger years was an insignificant 0.3% while the respective figure for the post-merger years was a statistically significant 2.8%. To distinguish between any persistence of the pre-merger performance of the combined firm in the post-merger years and the performance increase that is attributable to the merger, the authors examined the relationship between the industry adjusted cash flow returns on assets for the pre-merger years and the industry adjusted returns on assets for the post-merger years by regressing the latter on the former with the coefficient of the regression being described as the change in performance attributable to the merger. The regression results confirmed that acquisitions were the cause of a median increase in annual performance of merged firms of 2.8%. The authors also found a significant positive correlation between the stock market revaluation of merging firms at the time of the merger bid and the actual post-merger cash flow improvements.

In a later study, however, Healy et.al. (1997) investigating the same sample of acquirers discovered that the acquirers did not generate any additional cash flows beyond those required to offset the premium paid. In other words, the results indicated that acquisitions are a zero sum game for acquiring firms. In this work, Healy et.al. used the same methodology as they used in their earlier study, but in the cash flow return metric they included the premium paid to the target in the asset base for the five years following the merger completion. For each of the post acquisition years separately, and for all the five post acquisition years in aggregate acquirers experienced median cash flow returns on assets which were insignificantly different from their industry peers.

The most interesting finding of this study, however, was that the profitability of individual transactions varied widely. Acquirers that engaged in friendly acquisitions of firms in overlapping businesses that were financed by stock were found to outperform their industry peers, while the opposite was the case for hostile takeovers that were financed by cash for firms in unrelated business lines.

Parino and Harris (1999) examined the post merger operating performance of 197 acquirers in the period from 1982 – 1987. The average annual operating cash flow return on assets in the five post merger years was a statistically significant 2.1 percentage points above industry average. In this study, when target management was replaced, acquisitions had significantly better post-acquisition performance than when management was retained. In addition, post-merger returns are significantly higher where the target and the acquirer share at least one common business line and when they merge to take advantage of technology.

Ghosh (2001), criticising Healy's et.al. (1992) research design argued that the usage of industry performance as a benchmark for evaluating post-acquisition performance is likely to be biased. This is because pre-acquisition performance of merging firms may be higher than industry-median firms' performance because of permanent and/or temporary factors. Permanent factors which may cause merging firms to exhibit superior performance in the pre-acquisition years may result from the systematic differences in size between merging and industry-median firms. According to Fama and French (1995) large firms will be more profitable than smaller firms, and therefore, large merging firms are expected to perform better than smaller industry-median firms. Moreover, Morck et.al. (1990) suggests that acquiring firms may undertake acquisitions following a period of above-normal operating performance, a fact that is likely, in part, due to temporary factors which will be driven away by competitive forces in the future and above-normal profits will be eliminated. Therefore, Ghosh suggests that an appropriate benchmark for evaluating post-merger performance should control for effects associated with possible persistence of pre-merger performance in the post-merger years and with size differences between merging firms and control firms. Using a sample of 315 acquiring and target firms in the period from 1981 to 1995 and a control portfolio of two firms for each transaction matched on industry, performance, and size, the author reports that there is no evidence that operating performance improves in the three years following merger completion. Only acquisitions that were financed by cash exhibited a statistically significant increase in operating performance after merger.

3.3.1 The Evidence from Accounting Studies in the UK.

The U.K. evidence from ex-post studies can be divided into two broad categories; the first includes studies that examine the change in the return on assets of the acquiring firm in the post-merger years relative to a control group of firms, while the second category of ex-post studies identifies the effects of merger on cash flows. Typically, the evidence that is reported from the former suggests that performance deteriorates after merger while the latter indicate that merger improves cash flows.

Utton (1974) examined the profitability of 39 intensive industrial acquirers in the period from 1954 to 1965. The pre-tax profit over net assets was found to be no better than their industry peers in the years 1966 and 1967. However, a significant decline in average profitability appeared when the acquisition intensive sample was compared to a random sample of internal growth firms in the years 1961 – 1970.

Meeks (1977) examined the profitability of 233 mergers that took place in the U.K. during the merger wave of the 1960's (1964-1972). The performance measure was the return on net assets and it was adjusted for the effect of the performance of same industry firms. The author reported that in the year of the merger a slight improvement in profitability was recorded, with less than 40% of the sample recording a fall in profitability. However, in the three and five subsequent years an average decline in profitability was reported. The scale of this decline was considerable, amounting in some years to more than half the level of profitability achieved by the industry. The results were irreversible even when the author removed outliers and adjusted the net asset base of the combined company by subtracting the increase in goodwill that was the result of the overpayment[41]. Similar results are reported by Kumar (1984), after an examination of 241 mergers in the U.K. in the period from 1967 to 1974. The return on net assets exhibited a statistically significant decline in the three post-merger years but an insignificant decline in the fourth and fifth year, relative to the performance of the same industry peers.

[41] A possible downward bias to profitability may result from the way in which goodwill of the acquired company is recorded in the accounts of the acquirer. If the acquirer pays more than the book value of its acquisition then it will record the premium as additional goodwill. This increases the asset base of the combined company and hence may reduce the measured rate of return.

Conflicting evidence to that of Meeks and Kumar is provided by Cosh et.al. (1980). The authors examined 225 takeovers that took place between 1967 and 1969, comparing the average profitability[42] of the acquiring and acquired firms with a control group of non-acquiring and non-acquired firms of similar size and in the same industry. In the three and five years following the merger, the authors report evidence – though weak - that merging firms were more profitable than the matched control group companies. However, since pre-merger performance of acquiring firms was about the same as that of the matched control firms and the performance of acquired firms in the same period was distinctly lower than their matched control group, the weak increase in profitability in the post-merger years suggests that merging firms perform better than the control group of firms.

A sharp decline in the post-merger profitability is also reported by Dickerson et.al. (1997) for a sample of 613 acquirers which engaged in acquisitions from 1948 to 1977. The return on net assets for the year of the first acquisition was 1.38 percentage points lower than that of non-acquirers while the total reduction in profitability was 2.90 percentage points per annum in the five following years. Since the mean rate of return across all non-acquiring firms was 16.43%, the shortfall in performance of acquiring firms was (2.90/16.43) around 17.7% per annum.

Chatterjee and Meeks (1996) segmented a sample of 144 mergers that took place from 1977 to 1990 into two sub-samples. Before 1985, UK mergers exhibited no significant increase in profitability after merger. However, mergers that took place between 1985 and 1990 showed a significant improvement in accounting profitability returns in years following the merger completion. The authors attributed this difference in results to the accounting standards adopted after 1985. According to the authors, the two new standards (FRS6 and FRS7) allowed companies to enjoy great discretion over the valuation of assets by the widespread application of write-off accounting which affected future profits, and hence, the significantly positive change in reported profitability.

As with the U.S. studies, results derived from cash flow measures of performance are more optimistic about merger performance than those derived from profitability measures.

[42] The profitability measure was the average net income over the historical value of net assets.

Manson et.al. (1994), examined the operating performance of 38 U.K. acquirers and acquirees in the period from the beginning of 1985 until mid 1987. The measure of operating cash flow was similar to that employed by Healy et.al. (1992), i.e. the pre-tax, pre-depreciation cash flow return on market value of assets (market value of equity plus book value of net debt and preferred stock). The operating cash flow measure was also adjusted for changes in working capital, i.e. changes in stocks, debtors, and non-tax prepayments, less changes in creditors, and non-tax, non-interest accrual. In this way, the authors argued, the performance measure remains unaffected by accruals accounting difficulties related to inventory valuation and the recognition of bad debts. Merging firms' operating performance was adjusted for industry operating performance by subtracting the respective industry's median operating performance from the merging firms' operating performance for each year. The results indicated that industry adjusted operating performance in the post-merger years increased by a statistically significant 3.7% on average. Moreover, there was evidence that market assessments of the mergers at the announcement day were positively correlated with the increase in cash flows in the post-merger years.

Manson et.al. addressed the problem of the appropriate benchmark for measuring operating performance by looking at the counterfactual dimension of the issue. The authors argue that the key element to any test on the effect of a takeover is to model the pro-forma joint performance of the acquirer and of the target as if the takeover had not taken place, and they offer an analysis similar to the model that is provided by Healy et.al. Constraining the coefficient of the pre-merger industry-adjusted operating gains in the regression of the post-merger operating cash flows on the pre-merger operating gains to be equal to 1 or 0, they consider the problem from the point of view of competitive advantage. This approach implies that if the merging firms operate in a fully competitive industry then any competitive advantage of the two firms in the pre-merger period will disappear very fast due to competitive forces and hence, in the absence of a takeover, the industry adjusted performance of the two firms will be equal to zero. Thus, the estimate of the gains from the takeover would be equal to industry-adjusted post-takeover performance and the coefficient of the pre-merger industry adjusted operating performance will be zero. Then, the appropriate benchmark for post-merger industry adjusted returns is zero. Similarly,

in an uncompetitive industry, any pro-forma joint performance of the acquirer and the acquiree above or below industry standards would persist in the absence of a takeover, and therefore, in the regression of the post-merger industry-adjusted operating performance on the pre-merger industry-adjusted operating performance the coefficient of the independent variable should be restricted to be equal to 1. Then, the appropriate benchmark is the pre-merger performance. Finally, in the case of not perfectly competitive industries – as is the case in the real world – the pro-forma joint performance of the acquirer and the acquiree in the absence of a takeover would be a positive fraction of less than one of the pre-merger performance. This is assumed because imperfect competition would gradually erode any competitive advantage of the two firms with the passage of time until their joint performance returns to industry norms. In addition if industries are relatively uncompetitive it would be reasonable to expect that a level of the pre-merger performance would be sustained. Hence, in this case the gains from the takeover will be the actual post-merger performance minus the positive fraction of the pre-merger performance (as in Healy et.al (1992)). Nonetheless, this analysis, while theoretically comprehensive for examining the extreme cases of Healy's counterfactual model – i.e. the possibility that industries are perfectly competitive and the possibility that industries are fully uncompetitive – in essence it offers little new practical insight into the problem of what would have happened in the absence of a takeover, since in the real world typically product markets are imperfect.

Manson's et.al. study suffers from two major drawbacks. First, the study refers to a relatively small sample of acquisitions which were clustered in a short period of time, and hence, this might pose doubts about the generalisability of the conclusions. For example, the period of time under examination preceded a large scale decrease in stock market values in the U.K., and therefore it is unknown what the results would have been if the period under examination had included the next couple of years. Second, while the authors address the important issue of the exclusion from the sample of the acquirers that engaged in more than one acquisition during the period in examination, they exclude only those acquirers who took part in more than one takeover in an unspecified '*relatively short period of time surrounding the takeover under examination*' (op. cit, p.12). However, this may distort the

credibility of the results since acquisition performance was examined for five years prior to until five years after the acquisition, excluding the year in which the acquisition took place. If an acquirer made a relatively large acquisition during the five years before or after the takeover under examination, then its consolidated accounts would also reflect the performance of the additional acquiree.

The authors explain that their sample aims to include only those takeovers that constituted a single major strategic decision for the acquirer. However, the criteria for classified a takeover as a strategic one instead of another type are not explained. This is important because in the literature there are a variety of viewpoints for what constitutes a strategic takeover for an acquirer. For example, in the merger wave of the 1960's conglomerates justified their acquisitions as strategic actions for faster growth. In the seventies, the wave of divestitures was also justified as a strategic movement by sellers and acquirers towards company focus. Healy et.al. (1997) provide evidence that strategic acquisitions are outperformers, describing them as those financed by stock, in overlapping business, uncontested by the target management, while Megginson et.al. (2004) found that among strategic acquisitions those that increase business focus and are financed by cash outperform the rest in the post-acquisition period regardless of the target's management attitude towards the bid. In addition, one could argue that regardless of the strategic orientations of the firm and the criteria used for the sample construction, an acquirer that made one or more relatively large additional acquisitions in the eleven years under examination, would disclose the combined results in the financial statements making the evaluation of the post-acquisition performance difficult.

Powell and Stark (2005) examined the post-merger operating performance of 191 U.K. takeovers completed over the period from January 1985 to July 1993. The research design of this study included both Healy's et.al. (1992) and Ghosh's (2001) methodologies. Two alternative operating cash flow definitions were used; one as in Healy et.al. (op.cit.) and one as in Manson et.al. (1994). The operating cash flow returns measure was also tested for its sensitivity to three alternative deflators; total market value of assets, sales, and book value of assets.

The results indicated some improvements in post-merger performance depending, however, on the choice of operating cash flow definition and the deflators

that were used. Specifically, when Healy's regression model was used, the intercept of the regression that represented the operational gains which were attributable to the takeover was found to be 1.9% and significant at a 10% level when the operating cash flows were defined as in Healy et.al., and 1.6% significant at a 5% significance level when operating cash flows were defined as in Manson et.al. When the benchmark was adjusted for industry and size and pre-acquisition performance the respective numbers were 2% significant at a 10% significance level and 3.1% significant at 1% significance level. The deflator was the total market value of assets adjusted for market reaction at the announcement.

When additional parameters were added to the regression model, like the form of payment, whether the acquisition was friendly, whether it was disciplining, and the industry relatedness, none of the coefficients were statistically significant[43]. Similar results were produced when the benchmark for performance adjustment was pairs of firms, matched on the basis of industry relatedness, size, and pre-merger performance[44]. In all the alternative forms of the regression model, interestingly, it was found that acquirers who paid by cash performed worse than acquirers that paid by stock, and industry relatedness between acquirer and target had a positive effect on post-acquisition performance. However, none of these effects was found to be statistically significant. Moreover, post-acquisition performance was partially explained by pre-acquisition performance since the coefficient of the industry adjusted operating performance was always high and statistically significant. Similar results were produced when the deflator of operating cash flow returns was total sales. When the deflator was the book value of assets takeover gains appeared to be larger than when using the other deflators. This difference is not surprising since the historical cost of assets is typically much lower than their market value. However, using book values of assets makes performance comparisons difficult since the choice of accounting policy varies over time and across companies. When total sales is used as a deflator, biased estimations of operating performance may be produced,

[43] Except when Manson's definition of operating cash flows was used, with a benchmark adjusted for industry and size and pre-acquisition performance. In this case the intercept was found 3.3% statistically significant at a 5% significance level using two-tails test.

[44] In this case, when Healy's operating cash flow definition was used, the intercept indicating the takeover gains was 2% only significant at a 10% significance level using a two tail test, and 3% highly significant when operating performance was measured as in Manson's. When controlling for the form of payment, industry relatedness, whether the nature of the acquisition was hostile, and whether it was disciplining no statistical significance was found.

since firms may increase sales after aggressive pricing for market share increase purposes. In addition, sales may be affected by other factors than acquisitions in short periods of time.

When the authors used Ghosh's (2001) model for measuring operating performance, i.e. when the coefficient of pre-acquisition performance is restricted to be 1 and the takeover gains are measured against pre-acquisition performance, the improvements were negligible and statistically insignificant. The only exception to this was when the benchmark used was adjusted for industry, size and pre-acquisition performance and the operating cash flows were calculated as in Manson et.al. (1994). Then, the increase in operating cash flows over the total market value of assets employed (adjusted for market value revaluation of assets at the announcement period) was highly significant at 1.78%.

Powell and Stark's study provides for a good comparison between the results from alternative research designs and benchmarks which have been employed in previous studies. The authors suggested that they found some evidence of modest improvements in post-merger operating performance. The alternative models that were employed provided results that range from minor losses of -0.23% per annum to significant gains of 3.1% per annum, on average. This is not surprising since different models employ different measuring techniques.

On the other hand, what is more important in light of the high number of failing takeovers and the increased insistence of top management and large shareholders for new takeovers, is the answer to the question of what are the characteristics of successful transactions. Bruner (2004, p.53) refers to the widely held view that '*only about 20% of all mergers really succeed*' and argues that conventional wisdom generalizes too readily from the findings of some studies. In this summary paper, Bruner concludes that the average, benchmark adjusted return to corporate investment in M&A is close to zero as would be expected in any form of corporate investment in competitive markets, but the distribution of corporate returns is wide, that is, many buyers may realize losses.

Overall, the evidence from accounting studies is less favourable for acquisition performance than that derived from ex-ante event studies[45]. In addition, accounting studies that employ return on assets as a measure of profitability provide a gloomier view about the average outcome of takeovers than others that employ cash flow as a measurement metric. This last observation is true for the U.S. acquisitions as well as for the U.K. ones. A possible explanation for this contrast in the results between profitability and cash flow studies may be associated with different accounting treatments which will be discussed in the next Chapter. Another explanation could be the fact that different studies cover different time periods and some of the results might be time specific. For example, Meeks's (1977) study covered fully the merger wave of the 1960's while Kumar's (1984) and Cosh's et.al. (1980) studies covered only parts of that wave. What is definite, however, is that the puzzling issue of whether M&As create value has not yet received a unanimous answer, and therefore it needs further investigation.

3.3.2 An Evaluation of Powel & Stark' Study.

Whilst Powel and Stark provide a useful comparison between results from different models, they do not offer an explanation of what factors contribute to successful takeovers in the U.K. Indeed, in the very rich literature on M&As, the fact that some studies indicate substantial losses for acquirers while others indicate that they break even or they realise some gains in the post-merger period is well-established. The question in the 1990's shifted to *which* acquirers are successful given the best alternative methodologies for evaluating post-acquisition performance. This study emphasises on distinguishing which acquisitions are successful and what are their characteristics. For this reason we examine the performance of Strategic acquisitions in the U.K, the impact of the premium paid for the transaction, and how the interaction of different characteristics of merging firms affect cash flow returns.

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[45] Perplexing evidence on merger profitability is provided by qualitative studies, as well. A survey using interviews with 107 executives on 700 'of the most expensive deals' by KPMG International, indicated that 53% of deals reduced shareholder value and 30% broke even while only 17% of deals increased shareholder value (Deogun, 1999). Another survey by Mercer Consulting revealed that for 215 transactions that took place in the 1980's and in 1990's, 52% of 1990's deals outperformed their industry standards, compared to 37% of the 1980's deals (Lajoux and Weston, 1998). In a survey for the UK., Ingham et.al. (1992) report that among CEOs of 146 large firms 77% believed that profitability increased after merger and 68% believed that the benefits lasted for the long-run.

Moreover, the authors do not report how the issue of successive acquisitions from the same acquirers within a short period of time was dealt with. Many acquirers are systematic acquirers and in such cases, acquisition performance may be distorted by the financial results of the additional acquirees which will be reflected in the consolidated financial statements during the period of study. It is also important that acquirers that are engaged in a number of important international acquisitions during the period under examination be excluded from the sample. An investigation into the post-merger results of domestic bidders and targets does not eliminate the need for considering the case that the financial results of an acquirer may reflect performance which is partially the outcome of a significant international acquisition. In fact, in the 1990's U.K. acquirers engaged in more 5188 international acquisitions[46]. We deal with this problem by carefully identifying all the domestic and international acquisitions conducted by our sample acquirers and excluding the acquirers that conducted more than one significant acquisition within the whole period that this study extends[47].

Note also that the authors do not report how they treat the changes to SIC that occurred in 1992. Companies that belonged to a specific number 4 Industrial Code before 1992 were classified under a different definition from 1992 onwards, without having altered their core business, just because SIC changed. We dealt with this anomaly by manually grouping the appropriate number 4 Industrial Sectors so as to ensure homogeneity as described in Chapter 5.

Another noticeable characteristic of the study was the distribution of the takeovers in the period under examination. Out of the 191 takeovers, 150 or about 80% of the sample occurred from 1985 until the end of 1989, and over 72% or 131 takeovers were completed during the takeover boom period of 1985 to 1988. This might increase the possibility that some of the reported results of the study are time specific to the years during which most of the sample acquisitions occurred.

The period 1987-1989 was a typical period of expansion of U.K. companies through acquisitions and also these years represented the target peak in M&A

[46] Source: Office for National Statistics.
[47] In our study we examine acquisitions that occurred from the beginning of 1990 until the end of 1996. Assuming a 5-year window in examining operating performance we search for systematic acquirers for five years prior to and five years following the merger completion.

activity by numbers. It is quite possible, therefore, that motives and effects of takeovers do differ between time periods and especially between peaks and troughs in merger activity. For example, in the 1980's a greater percentage of takeovers were hostile than in the 1990's[48]. Motives and objectives between friendly and hostile takeovers are different and the outcome of takeovers is likely to be different too. Indeed, Kini et.al. (2004) report that in the U.S., the role of the takeover market as a source of performance-related discipline has changed from the 1980's to the 1990's. The decline in hostile takeover activity during the period 1989-1998 is concurrent with an increase in the intensity of alternative internal governance mechanisms which reduced the role of the takeover market as a source of managerial discipline.

Moreover, since the 1980's, competition policy has become more oriented towards considering the effects of takeovers on competition. This, may have altered the priorities of acquirers when considering an acquisition strategy from the pursuit of a rapid increase in profits through market power to the achievement of synergies and cost reductions through economies of scales or to the expansion to newly emerged industries. In turn, the alteration of acquirers' motives and objectives may have led to different effects of takeovers. In our study we have chosen the examination period to extend within the 1990's so as to update evidence concerning post-merger operating performance[49].

3.4 The Research Questions of this Study.

The aim of this study is to investigate whether U.K. takeovers are efficient transactions and consequently if they increase operating performance. In spite of 30 years of intense research on the subject of takeovers' effects on firms' efficiency there is not a clear and unanimous answer to the question of whether takeovers

[48] Kini et.al. (2004), report that the 1980's were characterised by intense takeover activity, an increased number of hostile takeovers, and less effective internal control mechanisms. In contrast, the first 8 years of the 1990's were characterised by a relatively lower takeover activity, friendly transactions and more evolved alternative governance mechanisms.

[49] This study refers to the period 1990-1996. This period was considered as the appropriate for the examination of merger performance in the 1990's since from 1997 onwards stock markets experienced unprecedented fluctuations. An examination of merger performance during this period would possibly provide time-specific results.

increase profitability for the engaging firms. On the contrary, conflicting evidence is provided by different studies for different periods of time.

The question becomes more crucial when considering the takeover activity of the last decade, since the 1990's have the distinctive characteristic of the intense technological advancements and the rapid innovation in management techniques which led companies to respond to competitive forces arising from the demands of the new corporate environment by extensive restructuring programmes and mainly through M&As. Companies that announce an acquisition strategy almost always justify the decision with the rationale of the creation of a competitive advantage or the enhancement of an existing one, seeking an increase in cash flows and profits for the benefit of shareholders. What is interesting, therefore, is whether takeovers that took place in the 1990's were investment decisions that increased efficiency and shareholder wealth. The latest evidence on U.K. takeovers was published after most of the research for this study was completed, by Powell and Stark (2005)[50] who examined that M&As occurred from 1985 to mid 1993. However, only 21% of their sample acquisitions or 41 transactions occurred after 1989.

This study focuses on acquisitions that occurred from January 1990 until December 1996 so as to provide evidence on the effects of mergers on firm's efficiency in the 1990's corporate environment which was substantially different from that of the 1980's and 1970's.

3.4.1. Overall Gains.

The existing evidence on takeover profitability that was discussed in the preceding section suggests that there is a wide dispersion of returns both within and across studies, indicating that there are good deals that pay more and bad deals that pay less. In a relatively large sample of small and large acquisitions one should expect that the average benchmarked post-merger performance cannot be substantially different from industry standards. As Bruner (2004) puts it, M&As are not homogeneous and some factors differentiate deals and predispose them to

[50] We learned of the Powell and Stark study four years after research for this thesis began.

success or failure. Hence, the average outcome of a large number of takeovers is likely to be zero.

Therefore, the first hypothesis that this study will test is that, in the corporate environment of the 1990's post-merger performance of acquirers is, on average, close to industry standards against the alternative hypothesis that acquirers' performance is different from industry's standards.

On the other hand, the average return from M&As is, to an extent, a reflection of (1) competition for corporate control, (2) the existence of impediments to takeover, and (3) the distribution of managerial objectives.

Competition allows assets and resources to move quickly to their most efficient use and companies can adjust quickly to changes in the corporate environment through this market. In addition, companies operate under the scrutiny of a large number of alternative management teams that continuously evaluate their performance and judge whether inefficiencies leave space for better profits under their management. Competition among management teams implies that incumbent management give their best efforts to maximize firm's profitability by timely and effectively exploiting all the internal and external opportunities. The threat to be taken over is also a disciplinary mechanism for resolving agency problems between managers and shareholders before such problems become very costly and affect a firm's efficiency.

Therefore, when the market for corporate control is extremely competitive firms would be expected to operate to their maximum level of efficiency and management to act in accordance with shareholders' best interests. Consequently, the more competitive a market for corporate control is the lower the number of potentially profitable takeovers there would be. Most potential takeover targets would operate in a manner such that almost all the opportunities for efficiency increases have been adequately exploited, and as a result, few takeovers would offer new opportunities for performance improvements. Even when a potential target operates inefficiently and a number of investment opportunities are lost, competition of alternative management teams to acquire it and improve its performance would increase the level of the acquisition price to a point that almost all the future performance improvements would be reflected in the acquisition premium.

Otherwise there would be no reason for shareholders to accept an offer. Thus, the investment, at best, will break even. A competitive market for corporate control is a factor that ensures that companies operate efficiently and that there is not much space for performance increases through M&As. Profitable acquisitions would be limited to a few cases where two already efficient firms are merged for the exploitation of synergies or economies of scale.

Nonetheless, no market is expected to be perfectly competitive in practice. There are impediments to takeover. Entry to the market for corporate control is an expensive and risky business. One prerequisite for competition to work is that all potential acquirers that could improve a potential target's performance have access to the necessary capital for entry into the acquisition contest. Firms, however, face capital constraints[51]. A small and innovative firm with a very competent management, for example, would probably find it difficult to lever the necessary funds to acquire a large potentially more profitable firm that operates under a slack and inefficient management.

If a firm's performance falls below a certain level, the larger the firm the fewer the number of potential acquirers that are able to fund the acquisition. The number of potential acquirers of a large inefficient firm may be so small in practice, that due to the lack of competition the acquisition price may be below the net present value of all future performance improvements, providing opportunities for positive returns on investment and ensuring the exploitation of the value gap between the present and the future value of the inefficient target[52].

Therefore, if capital constraints are a serious impediment to takeover one should expect fewer acquisitions but a relatively large proportion of acquisitions that

[51] Marris (1964) suggests that there is a mutual dependence between growth and profitability. Firms choose between a profit maximising point and a growth maximising point, which is subject to the supply of capital constraint. For a given rate of profit there is a limit in external financing, which is set by the stock market; only if a firm increases its retention ratio it would be able to finance higher growth. However, this would have happened at the expense of the dividends, a fact that would depress the ratio of the amount of external finance that investors would be willing to subscribe as a percentage of profits (matching ratio), given that investors' preference is towards current profits rather than future ones resulting from subsequent investments. Thus, there is a trade off between profit rate and growth rate reflecting that firms can maximise growth – by any means including M&As - for a given rate of profit. In addition, because acquisition projects entail high levels of risk, investment banks would not be willing to finance any potential acquirer; only large firms with established relations with investment banks would be able to get support for financing an acquisition.

[52] Even when an incumbent management is inefficient, however, potential acquirers may not be able to replace it and increase target's efficiency. According to Grossman and Hart (1980), assuming that each shareholder is very small to affect the outcome of a bid s/he has incentives to retain their shares in anticipation of participating in future profit increases, in the belief that other shareholders will decide to sell their stakes in the target.

are profitable, because the fewer the potential acquirers the less disciplined a potential target's management team would be, and the greater the probability for a firm to operate below its maximum efficiency standards.

In a perfectly competitive market information is available to everyone instantly. It would be oversimplistic, however, to assume that information is widely available in the market for corporate control. Asymmetry of information between current and potential managements is pervasive. Assuming internal managers have superior information compared with external managers, and that there is asymmetry of information between potential acquirers, the winner's curse seems highly likely to occur. This will also deter potential bids.

Internal information for bargain identification is not only limited to a certain number of experts inside and around a firm but is costly to gather and to evaluate. Information asymmetry among possible acquirers will make incumbent management teams in potential targets less alert about their firm's efficiency levels. This implies that when information about a target's potential for efficiency increases is available to a prospective acquirer, it is likely that the acquisition will be performance increasing.

The distribution of managerial capabilities may be a reason for the occurrence of profitable acquisitions. Managerial capabilities are not homogeneous across the market for managerial labour. Some management teams are more competent than others. This condition applies to all firms; thus, however competitive a market for corporate control would be, some managers simply could not meet – at least occasionally - such performance standards so as to avoid becoming takeover targets. Given a distribution of managerial capabilities, the less efficient a management the greater the probability that a superior management group will observe this and make a bid. The distribution of managerial capabilities therefore, may be a reason for a profitable acquisition when a competent acquirer decides to act.

Furthermore, managers can pursue objectives other than profit maximisation when the market for corporate control is not extremely competitive. This diversity of managerial objectives may increase the number of takeovers, though not necessarily profitable ones. As discussed in the previous Chapter, there is evidence that managers conduct takeovers for a variety of reasons; it is not solely the increase in

profitability by means of improving the performance of an inefficient target that forms the main motive for engaging in an acquisition. Managers' personal objectives, increase in the rate of growth through 'purchase of sales', seasonal fads, or the desire to dispose of excess cash to directions other than shareholders, may be some of the motives for acquisitions. If, therefore, a relatively large number of acquirers seek to make acquisitions for other reasons than increasing the efficiency of an inefficient target, a much larger number of value gaps will occur with a consequently higher number of acquisitions (Mueller, 1989). But a sizeable proportion of these acquisitions will not result in increased profitability.

Notice that, in the 1990's some of the impediments to takeover have loosened due to the advancements in financial services and information technology. Investment banking has developed innovative products for financing an acquisition to a degree that capital constraints have been decreased[53]. Information technology also contributed to the wider dispersion of information about firms' performance and made monitoring more effective. Finally, as Kini et.al. (2004, p.1512) suggest, in the 1990's corporate environment '*there is less takeover-related discipline to be applied to target firms when a higher level of monitoring is already in place*'.

The above discussion indicates that one cannot predict what the average outcome of M&As may be. The profitability of M&As depends upon a variety of parameters. Assuming that the market for corporate control is very competitive we can expect a smaller proportion of acquisitions to be profitable. However, no market is expected to be perfectly competitive in practice. Impediments to takeover, like capital constrains, may limit the number of potential acquirers. This may lead potential targets' managements to be less disciplined and thus, we can expect fewer acquisitions but a larger proportion of profitable ones. On the other hand, information asymmetries between internal and external managers and between potential acquirers may lead to overpayment for a target and the winner's curse seems very likely to occur. However, information asymmetry may also be a reason for profitable acquisitions, as well. In the presence of information asymmetry, incumbent managements are likely to be less alert about their firm's potential

[53] The U.S. experience from the 1980's where a large number of L.B.O's were implemented through the issuance of junk bonds is an example of financial products innovations that serve the financing of acquisitions.

efficiency level; thus, should a prospective acquirer become aware of the target's potential for efficiency increase, the resulting acquisition is likely to be profitable. Moreover, the distribution of managerial capabilities may be a reason for profitable acquisitions to occur. Finally, the diversity of managerial objectives is a factor that may determine the proportion of profitable acquisitions. If there is a relatively large number of non-profit maximising managements, then one can expect a large number of acquisitions to occur, a sizeable proportion of which will not be profitable.

Therefore, because of the multitude of parameters influencing the potential number and profitability of prospective M&As, one cannot ascertain what the average outcome of takeovers may be. This study seeks to contribute to addressing this issue for the U.K. corporate environment of the 1990s.

3.4.2. Distribution of Gains or Losses.

If on average one cannot say whether acquisitions increase or decrease profitability, a question that arises is which takeovers perform well and which do not. There is evidence in the U.S. (Healy et.al. (1997), Megginson et.al. (2004)) that strategic or synergistic acquisitions outperform financial acquisitions. Strategic takeovers are those that are financed by stock, are friendly, and the acquiring and target company are in the same line of business. According to Healy et.al., strategic mergers combine firms in the pursuit of synergistic gains while financial acquisitions intend to generate cash flow for the acquirer from the break-up of the target firm. Thus, the financing method, the relatedness of business operations of the acquirer and target, and the attitude of the acquirer towards a target's management, may play a determining role in the success or failure of a prospective acquisition.

The Financing Method.

In the presence of information asymmetry between managers and shareholders, managers have the incentive to issue equity when they perceive it to be overvalued (Myers and Majluf (1984)). In the context of acquisitions, this implies that acquirers prefer to pay by stock when they consider their stock overvalued and

by cash when stock is undervalued. There is plenty of empirical evidence consistent with this theory. Rappaport and Sirower (1999) report that in studies covering more than 1200 deals researchers have consistently found that at the time of announcement shareholders of acquiring companies fare worse in stock transactions than they do in cash transactions and the difference between cash and stock transactions becomes greater over time[54].

Moreover, Erickson and Wang (1999) provide evidence that firms conducting stock-financed acquisitions manage their earnings upward prior to their acquisitions so as to inflate their stock price and thereby reduce the cost of the acquisition. This implies that operating performance in the years subsequent to stock-acquisitions should be lower than the operating performance of cash-acquisitions, since accounting procedures prohibit accruals to reverse. The inflation of reported earnings in one period will have an offsetting effect in the next periods.

Fishman (1989), and Berkovitch and Narayanan (1990) argue that bidders offer cash when they have favourable private information about the value of the target due to potential synergies, so as to increase the likelihood of the acceptance of the first bid and thus, to eliminate delays during which competing bids may be elicited. In addition, to the degree that an acquirer feels confident for the prospects of an acquisition it increases the fraction of the cash in their offer so as to ensure a higher participation to the synergistic gains[55].

Therefore, the second research question of this study is whether cash acquisitions are associated with better post-merger operating performance than stock acquisitions. The hypothesis is that cash acquisitions outperform stock acquisitions against the hypothesis that cash acquisitions do not outperform stock acquisitions.

The Attitude.

[54] See for example Travlos (1987), Huang and Walkling (1987), Asquith et.al. (1987). Moreover, André et.al. (2004), in a study for Canada found that M&As financed entirely by equity underperform relative to cash transactions in the long-run. However, Drapper and Paudyal (1999) in a study for the U.K., report that share prices of acquiring firms decrease most if the shareholders of the target firms are given an option to receive the payment in shares or in cash.

[55] Rappaport and Sirower (1999) explain that in stock transactions the synergy risk is shared in proportion to the percentage of the combined company the acquiring and selling shareholders each will own.

The third research question of this study is associated with the attitude of the acquirer towards a target's management and its strategy. If an acquirer considers a target's management and its strategies ineffective due to either agency costs or to poor capabilities then it may conduct a hostile takeover by means of a tender offer to the target's shareholders in order to replace inefficient management and to abandon their strategy. If, however, the deal is negotiated and the acquirer plans to retain key managers and to continue and develop their current strategy then the acquisition is considered as friendly. Thus, it is expected that hostile takeovers should outperform friendly ones if target's pre-takeover strategy is not successful and its management inefficient. On the other hand, friendly takeovers would outperform the hostile ones if targets' pre-takeover strategies are successful and their management efficient. If such is the case the change in strategy and the organisational policies, the replacement of a successful management, and the feeling of insecurity across the organisational pyramid which is associated with a hostile takeover, would reduce post-takeover performance. Thus, the hypothesis is that targets' managements are inefficient and hostile takeovers outperform friendly takeovers. The alternative hypothesis is that targets' managements are efficient and hostile takeovers do not outperform friendly ones.

The business line overlap.

Companies undertaking acquisitions very often justify their decision on the grounds of expected synergies, cost benefits through economies of scale and scope, and an increase in market share. Plausibly, such benefits are more likely to occur in mergers between firms that operate within the same or similar lines of business than in mergers between firms with unrelated business operations.

On the other hand, diversification is usually considered as a means for achieving financial synergies and a strategy for balancing the investment portfolio of an acquirer; funds from mature slow growth industries are invested in industries with greater growth potential. However, there is evidence that diversification strategies destroy value (Berger and Ofek (1995), Maquieira et.al. (1998), Doukas et.al. (2001)).

To Williamson (1975) the allocation of resources within a diversified M-firm is more efficient in that it provides internal capital control. Others argue (Bowman and Singh (1993)) that the procedure of the allocation of resources across businesses is more effectively served by the stock market rather than the top management of a diversified firm during capital budgeting processes. There should be doubts about the quality of information that is received from division heads and the degree to which the evaluation of this information by top management is based to objective criteria and is not influenced by personal feelings. To the extent that these decisions are influenced by internal lobbying, resource allocations may be inefficient. In contrast, capital markets allocate resources for independent firms more efficiently since observers regularly monitor how companies acquire and use their funds. A firm's share price and bond ratings are constantly re-evaluated on the basis of monitoring results. Moreover, assuming that top management of diversified firms has the proper incentives to work on behalf of shareholders, they must use costly control systems that reward division managers on the basis of division profits and discipline managers by tying their career to business units' objectives.

In unrelated acquisitions there may be efficiency reductions due to employees' lower productivity to a greater degree than in horizontal acquisitions. New owners who are unfamiliar with business operations may try to economise from lowering employee's benefits that are based on implicit contracts made with former owners; this is because new owners are not bound to honour such contracts. On the other side, employees with relationship-specific investments in the target firm may become vulnerable to having quasi-rents taken by new owners. Since employees cannot sell their firm-specific assets which have been developed in the firm in the labour market at a comparable price to what they currently receive, they may consider leaving the firm if they receive less from the new owners before the external market value of the firm-specific asset is reached (Besanko et.al. (2000)). Similar situations with adverse effects on business efficiency may emerge with other stakeholders like suppliers, customers or creditors when relations are based on implicit rather than explicit contracts. Therefore, long-term efficiency may be in jeopardy since stakeholders being aware of a firm's past behaviour may be reluctant to invest in firm-specific assets in the future unless they are sufficiently compensated

for the risk of not receiving quasi-rents in the future. The problem could be more severe if an acquirer enters a new industry and lacks sufficient knowledge and understanding of business operations. These arguments suggest that companies should not attempt to do what investors can do themselves and more cheaply.

Therefore, if synergy is more likely to be realised in horizontal mergers and if diversification is a costly and more risky way for the achievement of what investors can do themselves, one could expect that post-merger operating gains should be higher for merging firms that operate within the same industry than merging firms with different business operations. Thus, the fourth hypothesis is that horizontal mergers create value against the alternative one that acquisition relatedness does not create value.

Strategic Mergers.

Each of the above takeover characteristics has different implications for the source of operating gains (or losses) in the post-merger years. Acquisitions, however, share combinations of these characteristics which in turn may be associated with better or worse post-merger performance. It is essential therefore to examine what is the outcome of acquisitions that share a number of the above characteristics. It is well established in the literature that friendly acquisitions are usually financed by stock or by a combination of stock and cash and hostile by cash. It is also well-documented that many of the diversification deals fail.

Friendly acquisitions that occur within the same industry and are financed by stock or by a combination of stock and cash – we define them as Strategic - are likely to outperform other types, for a number of reasons. Strategic deals are deals between firms in related industries where it is more likely that greater operating synergies, a stronger market position and cost reductions through economies of scale, will be achieved. Strategic acquirers also are engaged in friendly negotiations to arrange the terms of the deal avoiding the disruption of organisational operations through the replacement of a target's management. Retaining key managers, the acquirer is in a better position to embody and absorb an acquired organisation. Mid and lower management may be more cooperative since established explicit or implicit career

contracts can continue to exist. In addition, in friendly strategic acquisitions the acquiring management has access to internal proprietary information about the target and can ensure that their valuation about the price of the acquisition and the future gains are more precise. Finally, paying by stock strategic acquirers reduce their risks, in the case that future synergistic and other gains do not fully materialise. This is because a fraction of this risk is borne by the target's shareholders through the exchange of stock[56]. For the same reason, stock payment reduces the cost of possible valuation errors that may occur during the negotiation process on behalf of acquirer's management. On the other hand, by giving a choice of stock-and-cash payment to a target's shareholders, an acquiring management signals that it does not consider the acquisition as a means for expansion using overvalued stock as a payment method.

A possible counter-argument to the above could be that hostile acquisitions occur typically to improve the performance of the target's management. However, on balance, we argue that it is likely that Strategic mergers are more likely to outperform other types.

Thus, the sixth hypothesis in this study is that, in the U.K. Strategic mergers outperform other types of mergers.

Relative size.

If acquisitions increase efficiency and have positive effects on performance, then the benefits of an acquisition should be more visible to the degree to which acquisitions are large. The larger a beneficial acquisition is, the higher the gains. This should be particularly observable to related acquisitions. The benefits from synergy would be higher for acquisitions where the target's size is comparable to that of the bidder. When the target is very small relatively to the acquirer, even if the firms operate more efficiently together than they did as separate entities, one should not expect substantial gains to be observed since the improvements due to the small acquisition would be negligible in comparison to the size of the acquirer. By the same token, cost reductions due to economies of scale and scope in the post-merger period would be substantial as a percentage improvement of the pre-merger

[56] Target's shareholders accept such a risk with the expectation to participate in future increased earnings.

performance when operations and sales of the two firms are comparable in size. Supposing that a firm acquires a target that is only 2% of its size and implements a very successful cost reduction plan, then the improvements in post-merger years would not be substantial when measured against the acquirer's size standards.

It is argued that related acquisitions often occur for strengthening merging firms' position in the industry where they operate by increasing market power. The bigger the merging firms and the larger the relative size of target and bidder the higher will be the profits attributable to the increased market power. Thus, the highest performance improvements are expected in related acquisitions when bidders and targets are relatively large firms and the relative size of target and bidder is large.

On the other hand, small acquisitions – those for example where a target's size is 10% or lower of that of the acquirer – are likely to perform better since the integration process may be easier and the acquirer is able to have a better understanding of the target's business. Sirower (1997) refers to a McKinsey & Company study which reports that the failure rate of acquisitions fell from 61% overall to 54% when the acquisitions were less than 10% the size of the acquirer. Literature in the subject, however, provides mixed results. Shelton (1988) and Seth (1990b) find positive effects for relative size on acquirer performance while Kusewitt (1985) reports the opposite. Fowler and Schmidt (1989) find no significant relationship.

On the basis of the above, we test the following hypotheses: (1) large acquisitions perform better than other acquisitions in the U.K. (2) the performance improvements are higher for large acquisitions between large firms and (3) the effect should be amplified when large acquisitions are between firms that operate in the same industry.

Acquisition Premium.

An acquisition premium is the amount the acquirer pays on top of the market value of the target in order to acquire it. An acquisition premium is often necessary in order for the target firm's shareholders to be willing to sell their shares. On the other hand acquirers before proceeding with an offer, evaluate the potential gains of

the acquisition and make their offer which is usually higher than the current value of the target but less than the present value of the economic benefits that they expect from the deal. In any case, this is a rational economic approach for the justification of any investment decision. An acquisition premium, in other words, represents a proportion of the value gap between the current value of the target and the expected increase in value due to acquisition, which is paid to the target's shareholders to accept the offer. We would expect that an acquirer's expectations for future gains of the combined entity should more than offset[57] the acquisition premium that is paid in advance for the option of the acquirer to manage a target's resources.

There is a widespread view in the literature and in the financial press that often acquiring management offers very high premiums for acquisitions. High acquisition premiums are considered those that not only substantially exceed the pre-bid market value of the target but also those that require performance improvements that are virtually impossible to realise. Target firms in the pre-acquisition period are valued by the market participants at a price which embodies all future gains that are expected for these firms to achieve. Thus, an acquisition premium implies synergistic and other gains above what is already expected by these firms. The high rate of acquisition failures, therefore, is often accrued to overpayment. On the other hand, the extent to which an acquisition premium is 'high' is determined from the acquiring management's expectations for acquisition performance[58].

Crawford and Lechner (1996) suggest that a target's valuable attributes will cause the target to command a higher price, and thus, a higher premium. Therefore, to the extent an acquisition is considered as beneficial the premium should be high. On the other hand, the higher the premium an acquirer pays the higher should be the post-merger gains necessary to justify that premium.

There are several acquisition cases where acquirers which paid a low premium get worse than acquirers that paid a relatively high premium. Eccles et.al. (1999) report that for 10 deals where the acquirers paid a premium from 1% to 19% over the pre-bid market values of the targets the total returns on investment of the

[57] In economic terms, the increase in gains which is attributed to acquisition must offset not only the premium, but also the transaction costs associated with the deal and the intangible costs that the acquirer incurs – like the time and energy of senior management – in order for the deal to come in effect.

[58] Jensen (1988), summarising the empirical evidence on the effects of mergers reports that historically the premiums paid in hostile takeovers exceed 30% on average, while during the 80's they have averaged about 50%.

acquirers one year later were negative and ranged from -9% to -59%. For 10 deals where the acquirers paid a relatively high premium which ranged from 34% to 115% of the pre-bid target's value, the one-year total returns[59] were positive between 4% and 49%. However, as the authors suggest the size of the premium does not always correlate with the success of the deal.

The above discussion leads to the following expectation. If acquisition premium reflects the target's valuable attributes and the acquirer's expectations for future performance improvements, then acquisitions that were closed at a relatively high premium should outperform all other acquisitions. Alternatively, if acquisition premium reflects overoptimism on behalf of the acquiring management or a deviation of the acquiring management from shareholders' interests, then acquisitions that were closed at a premium should underperform all other acquisitions. So, our hypothesis is that on average there is no relationship between whether an acquisition closed at a relatively high premium or not and post-acquisition performance.

As it was discussed in Chapter 1, this work also examines the effects of M&As on merging firms' employment and employee costs, and tests the stock market's ability to forecast future changes in merging firms' operating performance. These two issues are discussed in chapters 8 and 9 respectively, where also the relevant research questions are addressed and the corresponding results are reported.

3.5. Conclusions.

The first part of this Chapter summarised the existing literature on the effects of M&As on firms' performances in the U.S. and the U.K. The most notable studies on the subject were discussed. These studies are divided into two groups in respect to the two main research methodologies that are used in large sample studies. The evidence from the first research type – research that is conducted by means of event-study methodology – is contradictory and is sensitive to the time period under examination, i.e. to whether the examination is conducted in a short period of a few

[59] Total returns are the cumulative market-adjusted returns for the first year after the completion of the deal.

days around the event announcement or it extents to a longer period of several months after the merger completion.

With the assumption of stock market efficiency – i.e. assuming that the stock market properly discounts all future changes in performance when a deal is announced – short-term event studies examine the market reaction for a few days window around the event announcement and provide consistent evidence that targets experience statistically significant gains that are exceptionally high in many cases, while bidders experience negligible gains or losses. A conclusion for the combined effect in performance for the two merging firms, however, is difficult to make because of the size differential between targets and bidders. A few studies on this topic provide some positive evidence, but the fact that M&As increase wealth of both targets' and bidders' shareholders, on average, is far from established.

When the time period of share price examination is extended to several months after the merger completion date, there is a stark contrast to the results. There is an almost unanimous finding that in the long run the united entity underperforms the market[60]. More importantly, a general disagreement among researchers about the appropriate benchmark for evaluating share price performance changes makes comparability of the results difficult.

In an attempt to explain the contradictory results between short and long-term event studies, some researchers express doubts about the fundamental assumption under the methodology which is the efficiency of the stock market. This argument implies that in light of the declining share price performance after merger completion, the positive findings of short term event studies should be accrued to market anomalies and to the possibility that investors are overoptimistic about the prospects of the deal. However, the possibility that merger, on average, may be beneficial in their theoretical planning but in many cases there are failures in the implementation process cannot be disregarded. Some other researchers question the degree to which long-term event study methodology is robust enough to draw conclusive inferences on the effects of mergers, since it is based on the benchmarking of returns for long periods during which the firm's risk and/or size may well have changed. Nonetheless,

[60] Or what the performance would have been without the acquisition.

in the thirty five or so years of research on the subject models have been enriched and evolved to a degree that at least the general findings can be regarded as robust.

Overall, despite the many volumes of papers on the subject, evidence on merger profitability that is based on event studies is still perplexing, and so is on both sides of the Atlantic.

The other main type of research on the effects of merger uses accounting data to evaluate whether mergers contribute to performance improvements. The evidence for both the U.K. and the U.S., is sensitive to the metric that is used to evaluate performance. Profitability metrics, like benchmarked returns on assets, provide a pessimistic view about mergers while operating performance measures, like the benchmarked cash flow returns on assets indicate that merger is beneficial, on average. Whether these contrasting results are due to different measurement approaches or due to time-specific effects is a question which is not satisfactorily answered.

In the U.K., the latest evidence on the subject mainly refers to M&As conducted during the 1980's and provides some weak evidence for performance improvements using a set of alternative methodologies and benchmarks that were initially applied for the U.S. The generalisation of the findings, however, with no further research concerning the 1990's environment should not be appropriate since the corporate environment of the 1980's and the 1990's are substantially different, implying differences in the motives for M&As and consequently in their effects. In addition it would be interesting for the results to be compared with those of the 1990's after the removal of some drawbacks concerning the sample construction.

The second part of this Chapter addresses the research questions that this study is going to address. Since there is not much evidence on the effects of mergers for the 1990's corporate environment in the U.K., and in light of some methodological drawbacks of previous studies on the subject, it would be interesting to examine issues related to the effects of M&As in the U.K. that occurred in the last decade. First, an examination of the average outcome of M&As will be considered. Secondly, the question of whether Strategic mergers perform better than other types of mergers is addressed. Third, the examination turns to the issue of the degree of competition in the market for corporate control and what the outcome of M&As

implies for it. Fourth, we addressed the question of what is the relation of merger characteristics, like the means of payment, the industry relatedness and the attitude of target's management towards the proposal, with the merger outcome. Fifth, the relation between the relative size of target and bidder is considered, and sixth, the relationship between the post-merger performance and whether the acquisition closed at a premium is discussed.

CHAPTER 4.

METHODOLOGY.

4.1. Introduction.

The previous Chapter addressed the disparate results from different research approaches on M&As performance. Short term ex-ante studies provide evidence that M&As, on average, create value[1] while most of the evidence provided by long term event studies is more pessimistic. The former research approach has been extensively criticised for taking the strong form of market efficiency for granted, while the latter suffers from methodological weaknesses associated with the benchmark that is used for evaluating share price abnormal returns over a long period of time. Ex-post empirical evidence on the performance of M&As is mainly provided by studies focusing on profitability measures or on cash flow measures. Profitability studies provide mixed results as far as merger performance is concerned while cash flow studies typically suggest that M&As lead to a performance improvement in the post-acquisition years; a debate over what is the appropriate benchmark for evaluating performance is also addressed in the literature for accounting studies.

In this Chapter we describe the methodology that is used in this work. We address the research questions of this study by measuring the actual post-merger performance of the merging firms using accounting data. This approach is chosen because when announcing an acquisition strategy companies typically refer to the enhancement of a competitive advantage that leads to increased revenues, profits, and cash flows. Therefore, it was considered appropriate that instead of measuring the success or failure of M&As by relying exclusively on what investors think at the time of the event announcement, one might directly examine the actual performance of the merging firms in the post-acquisition years. The benchmarked cash flow returns on market value of total assets are used as a metric for evaluating post-merger

[1] Targets' shareholders receive the lion's share of benefits while bidders' shareholders enjoy small benefits or just break even.

performance so as to avoid the accounting biases that arise when profitability measures are employed, as will be discussed later. Because the choice of the appropriate benchmark is a controversial issue among academics two alternative benchmarks were employed to evaluate performance: the performance of other firms in the same industry as of the acquirer and the acquiree, and the performance of a pair of firms matched with the acquirer and acquiree on the basis of pre-merger performance, industry relatedness, and size.

The structure of this Chapter is as follows: in section 4.2 we describe the performance measurement process; in section 4.3 the choice and the construction of the performance benchmark are presented while in section 4.4 we provide an alternative performance benchmark. In section 4.5 an approach for examining the relation between market's assessment of future operating improvements from takeovers in the period of the event announcement and the actual gains generated in the post-takeover years is presented. Finally, a method for measuring the employment effects of mergers is illustrated in section 4.6.

4.2. The Measurement of Operating Performance.

Following Healy, Palepu and Ruback (1992) the performance measure that is employed in this study is the pre-tax and pre-depreciation operating cash flow return on assets. Cash flows are defined as:

$$\textit{Sales} - (\textit{Cost of Goods Sold} + \textit{Selling \& Administrative Expenses}) + \textit{Depreciation} + \textit{Goodwill Expenses} \quad (4.1)$$

The use of operating cash flows for measuring performance is considered more reliable than the use of net earnings. This is because profits can be more easily manipulated by managers especially before major corporate events such as

takeovers[2]. Moreover, cash flows represent the actual economic benefits generated by the assets.

The definition of the operating cash flows metric that is employed in this study suggests that the measurement of performance is unaffected by taxation, the method of depreciation, interest expenses, and goodwill expenses. As far as goodwill expenses are concerned, the accounting treatment up to December 1999 in the U.K., was to write-off purchased goodwill against shareholders reserves. From January 2000 onwards, according to Financial Reporting Standards (FRS) 10, purchased goodwill is capitalised and is amortised through the profit and loss account. Therefore, in measuring the cash flows of our sample companies and for the control firms, no adaptation for goodwill expenses is needed for the years from 1985 to 1999. For the years 2000 to 2002 goodwill expenses are added back, as in formula (4.1) to get the operating cash flows.

Cash flows are computed before interest expenses so as to make the results comparable across takeovers that were financed by different methods of payment. When an acquisition is financed by cash or debt net earnings are computed after deducting interest expenses that represent the cost of debt but before allowing for any cost of equity, and therefore, for the same transaction post-merger profits will be lower if it is financed by cash rather that if it is financed by stock. Therefore, cash flows are computed before interest expenses so as to get a metric that reflects differences in economic performance and not in the method of financing the acquisition.

Changes in operating cash flows (**OCF**) are dependent on the size of the assets employed to generate them. To get a metric of operating performance that is comparable across firms, cash flows are deflated by the market value of total assets of the firm. Following Healy et.al. (op.cit.), we use the market value instead of book value of assets first because simplify cross-sectional comparisons[3] and second,

[2] For example, acquiring managers may have an increased interest to inflate earnings before the initiation of an acquisition strategy especially when the method of payment is the acquirer's stock. According to Barber and Lyon (1996) the use of cash flows is considered the appropriate performance measure after significant corporate events. Management, in certain circumstances, can be motivated to overstate their reported earnings. In such situations the researcher should use a cash-based performance measure rather than an accrual-based performance measure, so as to avoid erroneous conclusions that sample firms have experienced an erosion in performance post-event when sample firms are reporting lower income merely as a result of their use of accruals to overstate earnings pre-event.

[3] Companies may revaluate the book value of their assets at certain time points. This makes comparisons difficult.

because market values represent the opportunity costs of the assets. As in Manson et.al. (1994) total market value of assets (**TMV**) is approximated by the sum of the market value of equity plus the book value of net debt plus the book value of preferred stock at the beginning of each financial year[4].

Operating cash flow for each target and each bidder is calculated for the 5 financial years prior to the takeover and the 5 financial years following the takeover, with the year of the merger completion, i.e. the financial year in which the merger went unconditional, being excluded[5]. This ensures that any special acquisition costs or accounting treatments associated with the year of consolidation do not distort our results. Hence, for each target and each bidder operating performance is measured for the years -5 to -1 and the years +1 to +5.

We measure the operating performance (**OP**) of each pair of targets and bidders for the pre-merger years as the pro forma consolidated operating cash flows of the two firms deflated by the sum of their total assets. Therefore, for each pair of target and bidder and for each pre-merger financial year, the consolidated operating performance is:

Pro-forma pre-merger performance of the two firms:

$$OP_{i,t} = \frac{\left[OCF_{i,t}^{(ee)} + OCF_{i,t}^{(er)}\right]}{\left[TMV_{i,t}^{(ee)} + TMV_{i,t}^{(er)}\right]} \qquad (4.2)$$

Where,

$\mathbf{OP_{i,t}}$ is the consolidated operating performance for the pair of acquiree and acquirer i, for the pre-acquisition year t.

$\mathbf{OCF_{i,t}^{(ee)}}$, is the operating cash flows for the acquiree i, for the pre-merger year t,

$\mathbf{OCF_{i,t}^{(er)}}$, is the operating cash flows for the acquirer i, for the pre-merger year t,

$\mathbf{TMV_{i,t}^{(ee)}}$, is the total market value of assets of the acquiree i, at the beginning of the financial year t, and

[4] The end of each financial year for each firm, however, is not perfectly aligned across firms. Therefore, we use the calendar year in which a financial year ends to define the pre- and post-acquisition annual periods.

[5] Where data were not available for a 5-year pre- and a 5-year post-merger period, we restricted our analysis to a 3-year window around the acquisition with the year of the merger completion being excluded.

$\mathbf{TMV_{i,t}^{(er)}}$, is the total market value of assets of the acquirer i, at the beginning of the financial year t.

t = -5, -4, -3, -2, -1.

Operating performance for the post-merger years, is measured using accounting data of the combined entity, i.e., it is the acquirer's cash flows for each post-merger year divided by the total market value of its assets. However, the cumulative daily change in market value of equity[6] of the acquirer and the acquiree around the date of the event announcement is excluded from the asset base for each one of the post-merger years.

Post-merger performance is computed using data for the combined firm.

$$OP_{i,t} = \frac{OCF_{i,t}^{(er)}}{TMV_{i,t}^{(er)} - TC_{MV}} \qquad (4.3)$$

Where,

t = 1, 2, 3, 4, 5 and

$\mathbf{TC_{MV}}$ is the sum of the daily changes in market value of equity of the acquirer and the acquiree between the dates from 10 days prior to the first bid (not necessarily by the ultimate buyer in the case of the acquiree) until the date at which the merger went unconditional, adjusted for the movements of the FTSE All Share Index in the same period. Therefore, $\mathbf{TC_{MV}}$ is the sum of the cumulative daily market adjusted changes in equity value of the acquiree ($\mathbf{TC_{MV}^{(ee)}}$) and the cumulative daily market adjusted changes in equity value of the acquirer ($\mathbf{TC_{MV}^{(er)}}$) :

$$TC_{MV} = TC_{MV}^{(ee)} + TC_{MV}^{(er)} \qquad (4.4)$$

Following Gadad (2000), we calculate the market adjusted cumulative daily change in equity value of each acquiree (acquirer) using the following formulae:

[6] We assume that changes to the value of the debt and the preferred stock are very small around the date of the event announcement.

$$TC_{MV}^{(ee)} = \sum_{t=-10}^{n}\left[\left(MV_t^{(ee)} - MV_{t-1}^{(ee)}\right) - \left(MV_{t-1}^{(ee)}\left(\frac{FTSE_t - FTSE_{t-1}}{FTSE_{t-1}}\right)\right)\right] \quad (4.5)$$

Where

n is the date of the merger completion,

$\mathbf{MV_t}$ is the market value of equity of the acquiree (acquirer) at the day t,

$\mathbf{MV_{t-1}}$ is the market value of equity of the acquiree (acquirer) at the day t-1,

$\mathbf{FTSE_t}$ is the Financial Times All Share Price Index at the closing day t,

$\mathbf{FTSE_{t-1}}$ is the Financial Times All Share Price Index at the closing day t-1,

The market adjusted changes in equity in the period from 10 days before the announcement of the first bid until the date of the merger completion are excluded from the denominator of the measure of operating performance for the post-merger years (formulae (4.3)), in order for any improvements in operating performance due to merger to be revealed. In efficient stock markets, any anticipated improvements in cash flows due to merger will be capitalised and be reflected in the market value of equity at the period of the event announcement. Therefore, without this adjustment possible improvements in operating performance in the post-merger years would not be observed.

4.3. The Performance Benchmark.

Comparing post- with pre-merger performance would not be an indicative measurement for operating performance since industry-wide or economy-wide factors could affect merged firms' performance in the post-merger years. Healy et.al. (1992) found that the performance of the combined entity declines in the post-acquisition years. However, after an adjustment for industry performance merging firms were found to exhibit a performance improvement in the post-merger years. Factors that may affect the operating performance of all firms operating in an industry or the economy as a whole can vary and make it difficult to distinguish performance changes that are attributable to the takeover. For example, a change in

interest rates, ceteris paribus, affects stock prices and the market values of firms. Consequently, the denominator of our measure of operating performance would be affected by such changes which are unrelated to the takeover. Therefore, the operating performance of our sample firms must be adjusted for the acquirer's and acquiree's industry performances so as to get a measure of performance that is unaffected by the impact of industry-wide or economy-wide economic shocks.

The adjustment is made by measuring cash flow returns for all firms that belong to the same industry[7] with that of the acquiree and the acquirer (after excluding the acquiree and the acquirer from the respective industry). To identify in which Level 5 Industrial Sector an acquiree or an acquirer belongs we take as reference year the year -1. Then we calculate the median[8] value of cash flow returns of all firms that belong to acquiree's (acquirer's) industry for each year to get the median annual acquiree's (acquirer's) industry operating performance ($\mathbf{IOP_{i,t}^{(mee)}}$, $\mathbf{IOP_{i,t}^{(mer)}}$) for the acquisition i and the year t.

For the pre-merger years, the pro forma annual median operating performance for the acquisition i in the year t (t = -5,....-1) ($\mathbf{IOP_{i,t}}$) is the weighted average of the acquiree's median industry operating performance ($\mathbf{IOP_{i,t}^{(mee)}}$) and the acquirer's median industry operating performance ($\mathbf{IOP_{i,t}^{(mer)}}$) with the weights being the relative total market value of the acquiree's and acquirer's assets for the year, as in formulae (4.6).

Industry Operating Performance for the pre-merger years

$$IOP_{i,t} = \frac{\left[TMV_{i,t}^{(ee)} \cdot IOP_{i,t}^{(mee)} + TMV_{i,t}^{(er)} \cdot IOP_{i,t}^{(mer)}\right]}{\left[TMV_{i,t}^{(ee)} + TMV_{i,t}^{(er)}\right]} \qquad (4.6)$$

Where, t= -5,..,-1.

[7] Industrial definitions are based on the Datastream Level 5 Industrial Sectors which broadly correspond to the Stock Exchange industry classifications.

[8] We use median values to mitigate the impact of possible outliers.

It is useful to clarify at this point that there are differences in financial year-ends for firms in the same industry. Therefore, in measuring operating performance of industry firms, the OCF of a firm is computed for the financial year ending in the same calendar year as the relevant financial year of the acquiree or acquirer. The total market value is calculated by using the market value of equity at the end of the previous calendar year combined with the book values of net debt and preferred stock for the respective financial year.

Because acquiree and acquirer are not observed as separate entities in the post-merger period, contemporary total market values cannot be calculated. Therefore, (4.6) cannot be applied for measuring industry operating performance ($\mathbf{IOP_{i,t}}$) for the post merger years. To get a measure of industry performance that reflects both of the industries to which the acquiree and the acquirer belong, following Healy et.al. (op.cit.), the weights used in constructing a pro forma post-takeover industry median performance measure are those corresponding in the year -1 (formulae (4.7)).

Industry Operating Performance for the post-merger years

$$IOP_{i,t} = \frac{\left[TMV_{i,-1}^{(ee)} \cdot IOP_{i,t}^{(mee)} + TMV_{i,-1}^{(er)} \cdot IOP_{i,t}^{(mer)}\right]}{\left[TMV_{i,-1}^{(ee)} + TMV_{i,-1}^{(er)}\right]} \qquad (4.7)$$

Where t = 1,...,5.

Then, industry adjusted operating performance for the takeover i for year t ($\mathbf{IAOP_{i,t}}$) is taken after subtracting the pro forma pre- and post-takeover industry median operating performance as they calculated in (4.6) and (4.7) respectively for takeover i for year t from the pro forma pre- and post-takeover operating performance for takeover i for year t as they calculated in (4.2) and (4.3) respectively. Hence,

$$IAOP_{i,t} = OP_{i,t} - IOP_{i,t} \qquad (4.8)$$

t = -5,-4,…..,-1,1,…,5.

Formulae (8) provides estimates of merging firms' operating performance that is unaffected by contemporaneous downward or upward trends in the industries in which acquirers and acquirees operate.

However, in examining whether operating performance increases following acquisitions the basic question is what are the changes in cash flow returns which are attributable to the merger? In other words, post-merger performance may be affected by pre-merger performance if some permanent or temporary patterns in cash flows persist over time. If for example an industry is not sufficiently competitive some fraction of the post-merger cash flows may be due to the persistence of a competitive advantage of the acquiree and acquirer in the post-merger years. This fraction of performance of the two firms in the post-merger period would be observed even in the absence of the acquisition. Therefore, to address the issue of the counterfactual problem and to examine what is the actual performance change that is attributable to merger, the following regression is run:

$$IAOP_{i,t}^{(post)} = a + bIAOP_{i,t}^{(pre)} + e_i \qquad (4.9)$$

Where,

$IAOP^{(pre)}_{i,t}$, is the median of the industry adjusted operating performance for the years prior to takeover for takeover i, i.e. $IAOP^{(pre)}_{i,t}$ = Median {$IAOP_{i,-5}$,....., $IAOP_{i,-1}$}

$IAOP_{i,t}^{(post)}$, is the median of the industry adjusted operating performance for the years following the takeover i, i.e. $IAOP_{i,t}^{(post)}$ = Median {$IAOP_{i,1}$, ..., $IAOP_{i,5}$}.

In (4.9), the intercept coefficient is the measure of the *abnormal industry adjusted operating performance*. This represents the mean amount of post-takeover performance that is unexplained after controlling for the effects of the pre-merger performance. The slope coefficient b captures any correlation in cash flow returns between the pre- and post-merger years. Therefore, b $IAOP^{(pre)}_{i,t}$ indicates the effect of the pre-merger performance on the post-merger performance. A positive and

statistically significant b would indicate that if the acquiree and/or the acquirer possess a competitive advantage before the merger, this persists in the post-merger years and explains a significant fraction of the post-merger performance. Since the measure of operating performance is expressed relatively to industry performance, such a finding would indicate that U.K. industry (ies) are not sufficiently competitive. The argument is based on the rationale that in competitive industries a competitive advantage would very fast erode and firm's performance will return near to the industry's norms.

The methodology for estimating changes in operating performance due to merger that has been described so far is based on Healy's et.al. model which, for the sake of simplicity, we will call the *Regression Model* since it employs a regression-based approach to estimating any improvements in performance, post-takeover.

If (b) in (4.9) is constrained to equal one, improvements in performance are measured as post-takeover performance less the combined, target and acquirer, pre-takeover performance $IAOP_{i,t}^{(post)} - IAOP_{i.t}^{(pre)}$. Because the basis of comparison for estimating any improvements in the post-merger period is the combined, target and bidder pre-merger performance, this model is referred to as the *Change Model.*

In Chapter 6, the results, after the application of the above methodology on our sample companies, are illustrated. In the univariate analysis, pre- and post merger benchmarked operating performance of the sample companies is reduced to summary statistics. The median annual industry adjusted operating performance (IAOP) of the 79 sample combined companies is illustrated for each of the pre- and post-acquisition years and for the entire pre- and the entire post-merger periods. To test whether the median performance is statistically different from zero, the appropriate statistical test is the Wilcoxon signed-rank test (Barber and Lyon (1996)).

Univariate analysis is also extended into the Change Model and summary statistics are reported. In this case, the median industry adjusted operating performance of the 3 pre-acquisition years is calculated and is subtracted from the median industry adjusted operating performance of the 3 post-merger years for each takeover. Then, the difference between the two medians provides a measure of the change in operating performance Δ **(IAOP$_i$)** between the post- and the pre- acquisition periods for takeover i. The median value of these differences is tested using the

Wilcoxon sign-rank test[9] to infer whether the median change in performance is statistically different from zero[10].

Multivariate analysis is implemented using both the Regression Model and the Change Model[11]. In the regression (4.9) we added several combinations of dummy variables which represent factors associated with the acquisition which may determine future performance. These include the method of payment, target's management attitude towards the acquisition offer, industry relatedness, whether the acquisition was characterised as Strategic or Financial, the relative size of the acquisition, and whether the acquiree was purchased with a relatively high premium over its intrinsic value or at a discount. The definitions of these dummy variables are provided in Chapter 6.

Relative Size of the acquisition is defined as the market value of equity of the acquirer divided by the market value of equity of the acquiree as at the beginning of the year -1. Then, our sample was divided into two sub-samples: the first included the 38 largest acquisitions where bidder's size ranges from 7% to 317% of the size of the target, while the second included the 38 smallest acquisitions of the sample where the size of the bidder ranges from 400% to 37516% of the size of the target.

Relative Premium is defined as the Value of the Acquisition as reported from *Acquisition Monthly* divided by the market value of equity of the acquiree as at the beginning of the year -1. Two sub-samples were constructed following the above definitions; one that included companies that engaged in acquisitions where the acquirer paid for the acquiree an amount that ranged from 16% to 100% of acquiree's market value of equity, and a second sub-sample, where the acquirer paid an amount that ranged from 168% to 659% of the acquiree's market value of equity. The first sub-sample consists of acquisitions that were closed at a discount; 27 such acquisitions were found. The second sub-sample consists of acquisitions that were closed at a relatively high premium; as relatively high premium was considered a

[9] Siegel and Castellan (1988), provide a detailed description of how Wilcoxon signed-rank test is implemented.
[10] The same test is used to examine the median change in industry adjusted operating performance between the years 2 and 3 and the year -1. By excluding the first post-acquisition year we ensure that the estimate of performance change is unaffected by one-time costs related to the acquisition which may incur in the first post-acquisition year and are unlikely to be repeated in the following years.
[11] It is appropriate to note at this point that the Change Model is produced by the Regression Model if we restrict the coefficient of the independent variable $IAOP^{(pre)}$ in (4.9) to equal 1.

premium which exceeded by more than 50% the intrinsic value of the acquiree – 27 such acquisitions were identified in our sample.

Using the Change Model in multivariate analysis required us to define alternative dependent variables so as to examine the fraction of post-merger performance which was explained by the aforementioned dummy variables with varying post-merger periods. Therefore, we examined the change in the median industry adjusted operating performance between the 5 year post- and the 5 year pre-merger periods (**IAOPch5**), the change in the median industry adjusted operating performance between the 3 year post- and the 3 year pre-merger periods (**IAOPch3**), and the change in the median industry adjusted operating performance between the 2 year pre- and the 2 year post-merger periods (**IAOPch2**), for each takeover. Finally, a fourth measure of performance change was adopted; the change in the median industry adjusted operating performance between the years 2 and 3 and the year -1 for each takeover (**IAOPch23**). This measure of performance change provides an indication of the immediate effects on performance of the acquisition since it compares operating performance of the second and third post-acquisition years and performance of the first year prior to takeover; the first post-acquisition year is excluded since the performance might reflect costs associated to the acquisition which is unlikely to be repeated in the following years.

4.4. An Alternative Performance Benchmark

Ghosh (2001) shows that if acquiring firms outperform their industry peers in the pre-merger period due to either permanent or temporary factors both the Regression and the Change Model can lead to biased estimates of performance improvements. According to Ghosh, the Regression Model can give unbiased estimates of performance improvements only when any superior pre-acquisition performance of the acquirer is expected to be permanent and persistent in the future; then, controlling for pre-acquisition performance can solve the problem. However, if superior pre-acquisition performance of the acquirer is related to temporary factors, it is unlikely to persist in the future. Therefore, superior pre-acquisition performance

will decay over time. In this case, Ghosh demonstrates, both the Regression and the Change Model will lead to biased estimates of performance improvements. Because there is evidence in the literature that acquiring firms tend to outperform their industry peers in the years prior to takeover and that they are typically large firms relatively to their industry standards (Penman, 1991), it is important to employ a research design that counts for the possibility of biased estimates due to the existence of unusually high cash flows in the pre-acquisition period.

Following Ghosh (op.cit.), we compare post- and pre-acquisition operating performance of merging firms relative to control firms which are matched on the basis of industrial relatedness, pre-acquisition performance and size. This research design assumes that if merging firms exhibit unusually high operating performance in the pre-acquisition years, then the fraction of the permanent and temporary components of factors that lead to the increased cash flows, as well as the decay of the cash flow ratio over time must be similar for merging and matched firms. Barber and Lyon (1996) also suggest that for sample firms that perform unusually well or poorly, test statistics are well specified only when operating performance is compared to matched firms on the basis of pre-event performance and size[12].

The matching procedure that was adopted in this study is similar to that suggested by Loughran and Ritter (1997) and Ghosh (2001). We select a pair of matched firms for each acquiree and acquirer in the following way: all firms in the acquiree's and acquirer's industries with market value of equity between 25% and 200% of that of the acquiree and the acquirer respectively (as at one year prior to the takeover) are ranked by their operating cash flows. Then, firms with cash flows closest to those of the acquiree and the acquirer firms are chosen as the pair of matching firms. The pro forma data of matched firms are then aggregated for each year as in the case of merging firms in the pre-acquisition years (as in 4.2) to get a metric of operating performance of the control firms. If no firm satisfies the above

[12] However, as can be seen in Chapter 6, our sample companies do not exhibit unusually good or bad performance relatively to the industry median. In fact, the industry adjusted operating performance of the sample companies is not statistically different from zero indicating that the median combined target and bidder perform as well as their industry peers. Nonetheless, we employ both research designs – the Regression Model and the Change Model – using the two alternative benchmarks; the median industry performance and the matched firm's performance to make our results comparable with those provided by Healy et.al. and Ghosh.

requirements then the criterion of size is extended by selecting firms between the 25% and 400% of the size of acquirer or acquiree one year prior to the takeover[13].

In Chapter 7, the results from the univariate and multivariate analysis on the performance of merging firms are illustrated. Operating performance of the pro forma accounting data of the combined matched firms are subtracted from the pro forma data of the combined acquiree and acquirer for the pre-merger years to provide matched firm adjusted operating performance (**$MAOP_i$**) for the takeover i for each year and for the entire pre-merger period. In the post-merger years the operating performance that is derived from the pro forma data of the matched firms are subtracted from the operating performance of the combined entity to provide matched firm adjusted operating performance ($MAOP_i$) for takeover i for the post-merger years and for the entire post-merger period[14]. We also report the change in median matched firm adjusted operating performance between the 3 year post-merger period and the 3 year pre-merger period **Δ(MAOP).** This is derived by taking the median of the matched firm adjusted operating performance of years -3 to -1 for each takeover to represent the pre-acquisition period. Similarly, post-acquisition period is represented by the median of matched firm adjusted operating performance of the years 1 to 3 for each takeover. The difference of the median post-merger operating performance and the median pre-merger operating performance for the takeover i is then **$\Delta(MAOP_i)$.** In the same way we derived the difference in median matched firm adjusted operating performance between the years 2 and 3 and the year -1 for each takeover. The Wilcoxon signed-rank test was then applied on the values of **$\Delta(MAOP_i)$** to test whether its median value is statistically different from zero.

When operating performance is adjusted using pairs of matched firms, multivariate analysis performs similar tests as those that are performed when industry firms' performance is used as a benchmark (the respective dependent variables in this case are (**MAOPch5**), (**MAOPch3**), (**MAOPch2**), and (**MAOPch23**), and regression (4.9) is as follows:

[13] Powel and Stark (2005) extended the size criterion to get matched firms between 0% and 300%.

[14] The cumulative daily market adjusted change of the market value of equity of the acquirer and the acquiree is subtracted from the denominator of the cash flow ratio in each of the post-merger years to reveal any improvements in cash flows.

$$MAOP_i^{(post)} = a + bMAOP_i^{(pre)} + e_i \quad (4.10)$$

Multivariate analysis is performed by use of Ordinary Least Square Regressions (OLS) when industry firms are the control group of firms for performance adjustment, as well as when pairs of matched firms are used as a benchmark. The appropriate software for the implementation of these regressions was considered to be the SPSS. However, in many cases an unknown form of heteroscedasticity was detected after applying the Koenker-Basset Heteroscedasticity Test[15]. Therefore, we re-ran our (OLS) regressions correcting for heteroscedasticity using White's heteroscedasticity-corrected variances. This was implemented in LMDEP.8. We report our corrected results from the OLS regressions at the ends of Chapters 6 and 7, and we illustrate uncorrected results in Appendix. When appropriate, i.e. when there are more than two regressors we apply multicollinearity tests to diagnose the possibility that an independent variable has a linear relationship with another one. The tests used were that of the *condition index* ***k***, that of *tolerance*, and *the variance inflation factor*.

Finally, in Chapter 6 we report the change in unadjusted sales (Δ **SALES**), the change in unadjusted operating costs (Δ **Operating Costs**) and the change in the unadjusted number of employees per thousand pounds of sales (Δ **Number of employees per thousand of sales**) and the change in unadjusted employment costs per sales (Δ **Employee costs per Sales**) between the post- and the pre-merger periods[16]. In Chapter 7 we report the median change in adjusted operating costs per sales (**Δ Operating Costs per Sales-Adjusted**). The adjustment for the pre-merger years is made by subtracting from the operating costs per sales of the combined acquiree and acquirer the operating costs per sales of a combined pair of matched firms. Data of the acquiree and acquirer and of the pair of matched firms are aggregated as in (4.2). For the post-merger years the combined data of the pair of

[15] A full description of this test is in Gujarati (2003, p.415). The specific test was considered as the appropriate for detecting heteroscedasticity since it can be applied regardless of whether there is one regressor or many.

[16] The respective values are calculated as following: we subtract the median value of each variable for the post-merger years from the median value of each variable for the pre-merger years for each acquisition. Then, we get the median value from all acquisitions for the respective variable. For the pre-merger years we use data from the combined acquiree and acquirer as in the case of the unadjusted pre-merger performance (see 4.2) while for the post merger years we use data from the combined entity.

matched firms are subtracted from the relevant data of the united entity. Then, for each acquisition we find the difference between the median adjusted operating costs per sales for the post-merger years and the median adjusted operating costs per sales for the pre-merger period. The median value for all acquisitions is **Δ Operating Costs per Sales-Adjusted.**

4.5. Testing the Stock Market Assessment for Future Cash Flows.

As discussed in the previous Chapter there is a disparity in the results concerning M&As profitability between short term stock price studies and long term stock price and accounting studies. If the stock market is informationally efficient there should be a positive relation between stock price returns to shareholders at the event announcement and the post-merger operating cash flow returns. Therefore, we test whether abnormal returns in market value of equity of the acquiree and acquirer in the period around the event announcement can be explained by the actual operating performance (cash flow return on total assets) in the post-merger years. However, because operating performance is measured as cash flow returns on *assets* and the merger announcement returns are returns on *equity,* asset returns at merger announcement must be computed from equity returns to make the anticipated gains from the merger and the actual performance changes to be comparable.

According to Healy et.al. (1992) and Ghosh (2001) abnormal asset returns at the merger announcement are the weighted average of returns to equity and debt. Assuming that the value of debt does not change at takeover announcement[17], abnormal asset returns equal abnormal equity returns times the equity to assets ratio (**E/TMV**).

We compute the cumulative daily abnormal returns of the market value of *equity* (**CMARE**) from 10 days before the event announcement until the day the merger went unconditional[18] for each acquiree and for each acquirer, using the following formula:

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[17] See Kim and McConnell (1977), Asquith and Kim (1982).

[18] To compute abnormal equity returns we select a time interval from 10 before the official announcement of the merger so as to capture the effects on stock price from any leakage of information, and we measure equity returns until the day the merger went unconditional to capture investors' perceptions about the merger for all the period in which new information may be released about the deal.

$$CMARE = \sum_{t=-10}^{n} \left\{ \left[\frac{MV_t - MV_{t-1}}{MV_{t-1}} \right] - \left[\frac{FTSE_t - FTSE_{t-1}}{FTSE_{t-1}} \right] \right\} \quad (4.11)$$

Where:

CMARE is the cumulative daily abnormal returns on equity,

n is the day at which the takeover went unconditional,

$\mathbf{MV_t}$ is the market value of equity at the closing of day t

$\mathbf{MV_{t-1}}$ is the market value of equity at the closing of the previous day of day t,

$\mathbf{FTSE_t}$ is the Financial Times All Share Price Index at the closing day t,

$\mathbf{FTSE_{t-1}}$ is the Financial Times All Share Price Index at the closing day t-1,

Thus, the cumulative daily abnormal returns of *assets* of each acquiree (**CMARA**$^{(ee)}$) and each acquirer (**CMARA**$^{(er)}$) is the product of (4.11) times the equity market value from the year prior to the takeover to total market value of assets (**E/TMV**).

Hence, the cumulative daily asset abnormal returns of the combined acquiree and acquirer (**WCMARA**) is the weighted average of the acquiree and the acquirer asset returns where TMV of assets from the year prior to the takeover (i.e. the year -1) is used to calculate the weights, as in (4.12):

$$WCMARA = \frac{TMV_{-1}^{(ee)} CMARA^{(ee)} + TMV_{-1}^{(er)} CMARA^{(er)}}{TMV_{-1}^{(ee)} + TMV_{-1}^{(er)}} \quad (4.12)$$

We include WCMARA in the regression (4.9) as an independent variable so as to examine how asset returns are correlated with post-merger operating performance ($IAOP^{(post)}$) after controlling for the effects of pre-merger performance ($IAOP^{(pre)}$):

$$IAOP_i^{(post)} = a + bIAOP_i^{(pre)} + cWCMARA_i + e_i \quad (4.13)$$

Similarly, when the benchmark for operating performance adjustment is a pair of matched firms, (4.13) becomes:

$$MAOP^{(post)} = a + bMAOP_i^{(pre)} + cWCMARA_i + e_i \quad (4.14)$$

If abnormal asset returns reflect stock price revaluation because of improvements in future cash flows from acquisitions, then the coefficient (c) in (4.13) and (4.14) should be positive and statistically significant. Healy et.al. assume that other benefits (than operating performance improvements) to the total market value of the firm from takeovers are negligible, and therefore, the intercept coefficient (a) should be insignificantly different from zero. However, Manson et.al. (1994, p.30) suggest that '*no such evidence exists one way or another in the U.K. about the size of (or lack of) other benefits from takeovers*'. Further, Powel and Stark (2005) argue that the possible operating performance improvements are not necessarily the only source of gains from takeovers and therefore, WCMARA should capitalise all the benefits expected to arise from takeovers. This argument is based on the assumption that markets are informationally efficient. Thus, a statistically significant (a) would indicate that there is at least a proportion of the post-merger operating performance that is not explained by the market's assessment at the announcement.

Following Ghosh (op.cit.) we also test the relation between the change in cash flows between the post- and pre-acquisition years and the abnormal asset returns in the period of the event announcement. Formally, we ran the following regression:

$$WCMARA_i = a + b(\Delta IAOP_i) + e_i \quad (4.15)$$

Similarly, when the benchmark for operating performance adjustment is a pair of matched firms, (4.15) becomes:

$$WCMARA_i = a + b(\Delta MAOP_i) + e_i \quad (4.16)$$

If the stock market correctly forecasts changes in operating performance due to acquisition and capitalises them in the period of the event announcement, then (b) in (4.15) and (4.6) should be positive and statistically significant.

4.6. Examining the Employment Effects of Mergers.

We measure the number of employees per '000 pounds of sales[19] for the pre-merger years of the combined acquiree and acquirer ($\mathbf{NES_{i,t}^{(pre)}}$) using the combined data of the two firms for each of the years t = -5,....-1, for acquisition i, as in (4.17):

$$NES_{i,t}^{(pre)} = \frac{NE_{i,t}^{(ee)} + NE_{i,t}^{(er)}}{S_{i,t}^{(ee)} + S_{i,t}^{(er)}} \qquad t = -5, \ldots, -1 \qquad (4.17)$$

Where,

$\mathbf{NE_{i,t}^{(ee)}}$ is the number of employees the acquiree i employs in year t,

$\mathbf{NE_{i,t}^{(er)}}$ is the number of employees the acquirer i employs in year t,

$\mathbf{S_{i,t}^{(ee)}}$ denotes the sales reported in thousand of pounds of the acquiree i in year t, and

$\mathbf{S_{i,t}^{(er)}}$ denotes the sales reported in thousand of pounds of the acquirer i in the year t.

In the post-merger years we use data for the combined entity for measuring the number of employees per '000 pounds of sales ($\mathbf{NES_{i,t}^{(post)}}$) for each of the years t-1,...5 for acquisition i, as in (4.18):

$$NES_{i,t}^{(post)} = \frac{NE_{i,t}^{(er)}}{S_{i,t}^{(er)}} \qquad t - 1, \ldots, 5 \qquad (4.18)$$

[19] This metric was chosen to make results comparable across firms. Some firms employ less employees than others – ceteris paribus – depending on the degree to which their operations are labour intensive.

Then, the industry adjusted number of employees per thousand pounds of sales for the acquisition i for each year is:

$$NES_{i,t}^{(adj)} = NES_{i,t} - NES_{t}^{(IND)} \qquad t = -5,..,-1, 1,...5 \qquad (4.19)$$

Where:

$\mathbf{NES_t^{(IND)}}$ denotes the median number of employees per thousand pounds of sales of all firms in all the Level 5 Industrial Sectors of the Stock Exchange Year Book for which data are available in Datastream.

In chapter 8, the results after applying the above methodology are illustrated. Pre- and post merger benchmarked operating performance of the sample companies is reduced to summary statistics. The median annual industry adjusted number of employees per thousand pounds of sales (NES) of the 79 sample combined companies is illustrated for each of the pre- and post-acquisition years and for the entire pre- and the entire post-merger periods. To test whether the median performance is statistically different from zero, the appropriate statistical test is the Wilcoxon signed-rank test (Barber and Lyon (1996)).

We also estimate the median change of the industry adjusted number of employees per thousand pounds of sales between the 5-year post- and the 5-year pre-merger periods[20], **Δ (NE per '000 Sales)**. For each acquisition, we estimate the median industry adjusted number of employees per thousand pounds of sales for the pre-merger years and for the post-merger years. Subtracting the latter from the former we get the median change of the industry adjusted number of employees per thousand pounds of sales for each acquisition. The median value of these differences from all sample acquisitions is then, the median change in the adjusted number of employees per thousand pounds of sales for the sample companies **Δ (NE per '000 Sales)**. We test whether this value is statistically different from zero using the Wilcoxon signed-rank test.

[20] When the relevant data for a 5-year window are not available we estimate the median change in the adjusted number of employees using data for a three year window.

The pre- and post-merger employee costs per sales ($\mathbf{ECS_{i,t}}$) for year t and for acquisition i are calculated similarly:

$$ECS_{i,t}^{(pre)} = \frac{EC_{i,t}^{(ee)} + EC_{i,t}^{(er)}}{S_{i,t}^{(ee)} + S_{i,t}^{(er)}} \qquad t = -5, \ldots, -1 \qquad (4.20)$$

$$ECS_{i,t}^{(post)} = \frac{EC_{i,t}^{(er)}}{S_{i,t}^{(er)}} \qquad t = 1, \ldots, 5 \qquad (4.21)$$

Where,

$\mathbf{ECS_{i,t}^{(pre)}}$ is the employee costs per sales for the combined acquiree and acquirer for the acquisition i, for the pre-merger year t,

$\mathbf{EC_{i,t}^{(ee)}}$ is the employee costs for the acquiree that participates in the acquisition i for the pre-merger year t,

$\mathbf{EC_{i,t}^{(er)}}$ is the employee costs for the acquirer that participates in the acquisition i for the pre-merger year t,

$\mathbf{S_{i,t}^{(ee)}}$ represents the sales of the acquiree that participates in acquisition i for the pre-merger year t,

$\mathbf{S_{i,t}^{(er)}}$ represents the sales of the acquirer that participates in acquisition i for the pre-merger year t.

$\mathbf{ECS_{i,t}^{(post)}}$ is the employee costs per sales for the combined acquiree and acquirer for the acquisition i for the post-merger year t.

Then, the industry adjusted employee costs per sales for acquisition i for each year is:

$$ECS_{i,t}^{(adj)} = ECS_{i,t} - ECS_{t}^{(IND)} \qquad t = -5,..,-1, 1,\ldots 5 \qquad (4.22)$$

Where,

$\mathbf{ECS_t^{(IND)}}$ is the median value of the employee costs per sales of all firms that belong to all Level 5 Industrial Sectors of the Stock Exchange Year Book for which data are available in Datastream. Summary statistics for the annual industry adjusted employee costs per sales for the each pre- and post- acquisition years is illustrated in Chapter 8.

The median change of employee costs per sales between the post- and the pre-merger periods **Δ (EC per Sales)** is calculated by subtracting the median value of the employee costs per sales for the 5-year post-merger period from the median value of the employee costs per sales for the 5-year pre-merger-period for each sample acquisition. The median value of these differences is the median change of employee cost per sales, and the statistical significance of this value is tested using the Wilcoxon signed-rank test.

We use multivariate analysis to examine the effects of M&As on employment and employee costs for specific sub-samples of mergers that share certain common characteristics after controlling for other factors that may affect employment and employee costs after the acquisition. The independent variables are described in chapter 8 and include variables that denote the method of payment, whether the acquisition was hostile or friendly, industry relatedness, the strategic orientation of the takeover, whether the deal was closed at a discount or the acquirer paid a relatively high premium, and whether the acquisition was characterised as large or small.

The dependent variables in these regressions were the change in the median adjusted number of employees per thousand pounds of sales between the 3-year post- and the 3-year pre-merger periods (**Δ_nr_EMPL**), and the change in the median adjusted employee costs per sales between the 3-year post- and the 3-year pre-merger periods (**Δ_EMPL_COSTS**).

As a more precise benchmark indicator, the combined number of employees per thousand pounds of sales and the combined employee costs per sales of a pair of matched firms[21] for each acquiree and acquirer were chosen to get the adjusted values of the respective variables.

[21] Pairs of matched firms were chosen on the basis of pre-merger performance, size, and industry relatedness.

4.7. Conclusions.

In this Chapter the methodology applied in this work was presented. Two alternative approaches for measuring operating performance of the U.K. M&As were applied; Healy's et.al. Regression Model and Ghosh's Change Model. Moreover, operating performance was adjusted for the industry's operating performance and for the operating performance of pairs of firms matched with acquiree and acquirer on the basis of pre-merger performance, size and industry relatedness.

Following Healy et.al., we estimate post-merger operating performance changes after controlling for the effects of pre-merger operating performance to get the fraction of performance changes in the post-merger years that is attributable solely to the existence of the acquisition and not to permanent or temporary factors that are related to pre-merger performance. This is examined using both the chosen benchmarks for performance adjustment.

The correlation between the market's assessment of the future takeover gains in the event announcement period and the actual benefits that are attributable to takeover are also examined. Finally, we describe a method for measuring the effects of the U.K. M&As on employment and on employment cost. The results from the application of the above methodology are presented in detail in chapters 6, 7 and 8.

CHAPTER 5.

SAMPLE SELECTION AND DATA PROCESSING.

5.1. Introduction.

In this Chapter we describe the sources and the selection criteria for constructing our sample and the benchmark of control firms for evaluating merging firms' performance. Information that is provided in the Appendix of this chapter is useful for the reader to follow the procedure by which we manipulated the data retrieved from the alternative sources in order to get our final sample. The structure of this chapter is as following: in the Section 5.2 we analytically illustrate the criteria and the requirements for the sample construction procedure starting from the retrieval of the 'raw' data until the point we get our final sample. In the section 5.3 we describe how we get industrial sector data so as to construct our industrial firms' benchmark portfolios. In section 5.4 we discuss the criteria for creating our matched firms' benchmark portfolio, and finally, in the conclusions we discuss some of the difficulties that we faced in collecting and manipulating our data.

5.2. Sample Construction

The period of this study extends from the year 1990 up to 1996, i.e. it includes the acquisitions that were completed within this period. We believe that extending the period in examination after 1996 would entail the risk of obtaining results that are affected from time-specific factors related to the late 1990's stock market fluctuations. The companies are selected so as both the bidder and the target are public companies listed on the London Stock Exchange. All the companies should belong to manufacturing and service sectors, while banks, insurance companies, building societies and any other financial institutions are excluded[1].

[1] The accounts of these firms are not comparable with industrial and service sector firms' accounts; the nature of sales, assets, and other components of cash flow returns are different for financial firms.

The selection took place using as a source the *Acquisitions Monthly*[2] periodical where all the mergers and acquisitions, taking place in the UK, are quoted in its monthly issues. Initially, **205** transactions involving 410 companies with the preceding characteristics were identified. In a second step, where the bidder or the target was a utility or a transportation company, the acquisition was excluded because of the special regulatory requirements imposed by the government regarding the pricing of their services; 11 such transactions were identified – one acquisition took place in the telecommunications sector, five in electricity, four in the water industry, and one acquisition was related to transportation. Moreover, 12 transactions where either the acquiree or the acquirer or both were involved in business related to real estate investments, were excluded, due to the differences in the accounts between those companies and the rest of the sample[3]. This reduced the sample to **182** acquirers and their respective acquirees (table 5.1 in Appendix).

In all acquisitions the acquirer purchased a majority holding in the acquiree as indicated by the information available in *Acquisitions Monthly*. *Acquisitions Monthly* was also the source for the announcement dates of the event, the completion dates – i.e. the date on which the bid went unconditional, the size of the acquirer and the acquiree in terms of sales in the year before the acquisition and the method of financing the transaction.

Acquisitions Monthly lists acquisitions where the target is a 'public' company, that is, a U.K firm listed on the L.S.E., but it does not state whether the bidder is listed. To discover if the bidder was listed we consulted DATASTREAM. All of the 182 bidders were found to be listed companies.

A necessary requirement for this work and the implementation of the methodology was that accounting data was available for the entire sample–all bidders and targets- in DATASTREAM during the whole period in question. Unfortunately, this further reduced the number of sample companies down to **59**.

The sample of the 182 transactions can be divided into three sub-samples. There were **40** transactions (table 5.2 in Appendix), where for both the involved parties a full five-year window of accounting data surrounding the completion date

[2] Acquisitions Monthly lists all the U.K. acquisitions - domestic and international, private and public – in contrast to Datastream which simply provides the list of the 'dead' companies without referring to the reason of their 'death'.

[3] This is for the same reason as explained in footnote 1.

existed in DS, with the year of the completion (year 0) not included. In the case of **19** transactions (table 5.3 in Appendix) a three-year window was available. For **123** acquisitions DS contained accounting data for less than three years prior to or after the year 0 for either the target or the bidder or for both. This last sub-sample of **123** transactions for which there was not a complete 5 or 3 year window of accounting data in DS around the completion date subdivided into 8 sub samples with regard their characteristics of completeness:

1. For **42** acquisitions the targets had a complete five year window around the completion year while the bidders had no accounting data in Datastream (table 5.4 in Appendix).
2. For **5** acquisitions the targets had a complete three year window and the bidders had no data (table 5.5 in Appendix),
3. For **3** acquisitions the targets had accounting data for some years around the completion year but less than three years, while bidders had no data (table 5.6 in Appendix),
4. For **8** transactions the bidders had a complete five year window of accounting data around the completion date, while their targets had no data at all (table 5.7 in Appendix),
5. For **5** transactions the bidders had a three year window while the relevant targets had no data (table 5.8 in Appendix),
6. In **4** transactions the bidders had accounting data in DS for some years around the event but for less than a three year window and the relevant targets had no accounting data in DS (table 5.9 in Appendix),
7. For **10** acquisitions DS did not provided for accounting data either for the targets or for the bidders (table 5.10 in Appendix), and, finally,
8. In **46** cases DS provided accounting data for both the target and the bidder but for either of them or for both, for an incomplete period around the completion date of the event; i.e. for less than three years or for three or five years prior to or after the completion year but not immediately prior to or after it (table 5.11 Appendix).

Therefore, if we rely only on DS to gain the necessary accounting data the initial sample of the 182 acquisitions for the period in question is reduced to 59; 40 with five year window and 19 with three year window. In other words, the results of this study would rely only on less than the one third of the initial sample. While this number could be regarded as satisfactory in comparison to the number of companies used in previous similar studies for the UK and Australia[4], it was considered necessary to extend the number of companies as much as possible, using complementary sources, to make the results as representative and robust as possible.

To increase the sample size we consulted Companies House to acquire accounting data for more companies for the initial sample. Companies House provides the annual accounts – Balance-Sheets, Profit-Loss accounts and Cash Flow Statements – as well as information about the strategic decisions of the firm as they are expressed in the annual report of the Board, the realisation of any other significant acquisitions within the period of study and the name changes of the firm in the past. This last piece of information was considered extremely useful for obtaining the market capitalisation of the firms whose accounts retrieved from Companies House for past dates, consulting Financial Times past issues, as it is described below.

For the companies involved in the 59 acquisitions, for which data are available in DS, market capitalisation can be retrieved from DS at the date of issuance of their accounts, and at the days before the announcement of the event and at the date of the completion. But this information is not provided by Companies House. However, having gained the history of the name changes for each company from the Companies House data base, the relevant past issues of *Financial Times* were employed. In most of these cases Market Capitalisation of each firm was provided at the date in question. There were, however, a considerable number of dates at which FT issues did not provide the market value of the firm but only the share price at the closing of this day. In cases such as these, the 'gaps' were filled using information provided in the *Stock Exchange Year-Book.*

To calculate market capitalisation, the value of the share price that was taken from the FT at the date in question was multiplied by the number of outstanding ordinary shares at the same date. The latter was extracted dividing the nominal value of equity

[4] In their study for the UK, Manson et.al. (1994) examined 38 takeovers, while Sharma & Ho (2002) in their study for Australian takeovers examined 36 cases.

with the nominal value each ordinary share as these values provided in the section of the Stock Exchange Year-Book called '*Capital*' for each firm. The section '*Capital History*' was used so as to identify the dates of any capital increases across the years and the relevant nominal values of equity to be employed for the calculation of the number of outstanding ordinary shares; then, the market capitalisation at the date in question was calculated using the share price value taken from the FT.

A limitation at this point was that in most cases the SEYB refers to capital increases and provides the month and the year of each such event. Since one of the dates in question for the estimation of the market value of each firm was the completion date of the acquisition, where an increase in share capital took place within the month of the completion it was assumed that the increase took place before the completion, as it is the case in practice, whatever the method of payment for the transaction.

In total, for 49 (table 5.12 in Appendix) companies data were available in the Companies House database for a five year window or for a three year window around the completion of the acquisition - the year of the completion excluded. For the rest of the companies the data for the bidder or the target (or both) had either been archived from the files of CH or one of the participants was private until a period of less than three years before or after the acquisition or for some reason some of the annual accounts in the years surrounding the merger, were missing.

From the 49 companies whose annual accounts we gained from the Companies House database, 39 were bidders and 10 were targets corresponding to 53 (Appendix 1-Part 1, table 12) acquisitions. Furthermore, one of the 39 bidders took place in two acquisitions but with a sufficient time period between them, so as for the two transactions to be treated in the sample as if they were made by two different bidders[5].

Unfortunately, it was not possible to include all the 53 acquisitions in the final sample, since as has been stated above, market values or share price values must be available in the FT for all these companies on the date their accounts were published and for all the three or five years surrounding the year of the acquisition and one month before the announcement of the acquisition and at the date of its completion.

[5] Coats Viyella acquired Tootal Group and Atkins Group in 1995 and 1991 respectively.

Table 5.12 in Appendix shows that for 11 bidders and for 4 targets[6] these values were not available at least in one of them, and thus, the number of acquisitions that were included in the sample is reduced to 38.

Data availability for these 38 acquisitions allows calculations to be extended to a 5 year window for 17 acquisitions and to a 3 year window for 21 of them. As a result, the initial sample consisting of data derived from DataStream was increased to 97 pairs of companies in total **(40+19+38)**. Analytically, the list of the eight sub-samples mentioned above, was configured, after having been completed with the accounting data and the market capitalisation values of the companies available in Companies House and FT. (See Tables 5.13, 5.14, Appendix).

In summary, from both the main sources of data - the *DataStream* and the *Companies House* databases - 194 companies had a full set of accounting and market capitalisation data, and were involved in 97 acquisitions within the period from 1990 to 1996. Using Companies House as a complementary source to DataStream for accounting data, and the relevant past issues of Financial Times and the Stock Exchange Year-Book, it was made possible to increase the number of acquisitions in the sample from 59 to 97; 58 of them having data for a 5-year window and 39 with a 3-year window around the year of the merger completion – the year of the completion always excluded. In other words, it made possible the increase in the number of the acquisitions to more than half of the initial sample.

As has been already explained in the methodology chapter, the possible change in performance of the merged firms is detected by measuring cash flow returns for time periods prior to and after the event. This approach creates some problems when a bidder takes part in more than one significant acquisition within the period of study[7]. In such cases the cash flow returns after the takeover under examination, may be biased upward if a bidder acquired another target before that takeover and biased downward if the bidder took part in another acquisition after it and the method of payment was cash. If the method of payment was stock or a combination of stock and cash, again, biases in the results may arise since cash

[6] In the case of the acquisition of Parkdean leisure by Vardon, for the former market capitalization values do not exist while for the latter are available, and consequently the transaction is not included in the sample.

[7] In some cases this period extents form three year before the acquisition to three years after it, the year of the completion of the acquisition not included while in some other cases it extents form five year before to five year after the acquisition, the year of the completion not included.

flow returns are estimated using the market value of assets which may be affected substantially when an acquisition takes place.

To avoid such biases in the results of this study, bidders that took part in more than one significant acquisition within the period in question were excluded. An acquisition is defined as a 'significant' one, if the size of the target, measured by sales in the year prior to the acquisition, is at least one third of the size of the sales of the respective bidder in the same year. While this restriction makes the results more robust, it has the drawback that it further reduces the size of the sample. As a result, the size of the sample is reduced down to 85. Analytically, the process for taking account of bidders that engaged in multiple acquisitions is explained below.

In the initial sample of the 182 transactions, 22 bidders took part in more than one acquisition, totalling 49 acquisitions (table 5.15, Appendix). After allowing for the reductions in the initial sample, due to the lack of data, 29 acquisitions included in the final sample of the 97 transactions which have been conducted by 18 acquirers. In other words, for 20 such acquisitions – where the bidder purchased more than one companies – a complete set of data was not available in any of the sources used, and therefore, these acquisitions had already been excluded due to the lack of data in the previous stage (table 5.16, Appendix). From the 29 acquisitions, 12 were excluded (Table 5.17, Appendix) for the following reasons:

1. either because the bidders took part in at least one more significant acquisition within the period of this study,
2. or because a bidder that purchased a target for which there was not a complete set of data in a 'significant' acquisition, also took part in other acquisitions which had complete data and were all 'insignificant'.

Consequently, only 17 acquisitions (table 5.18, Appendix) were included in the sample after the above filtering, and thus, the number of acquisitions is reduced to **85** (Table 5.19, Appendix).

It should be noted that allowing for the effect of possible multiple significant acquisitions made by one bidder enhances the potential of the sample to produce reliable results without sacrificing a substantial number of acquisitions. Only 12

acquisitions were excluded for this reason, since 20 out of the 49 would have been excluded in any case due to the lack of data.

However, while the period of study includes acquisitions that took place from 1990 to 1996, the year-window for some acquisitions in the sample can be extended from 1985 to 1990 and from 1996 to 2001[8]. To further purify the sample we considered whether some of the sample bidders engaged in more than one significant acquisition within these two periods, as well. Unfortunately, for the period from 1985 to the end of 1989 data was not available for comparison[9]. The delistings from the London Stock Exchange board ware examined for the period from the 1st of January 1997 to the 31st of December 2001 as an alternative source of data in order to avoid any further increase in the cost of this work. It was found that *BTR SIEBE* made a significant acquisition in the first quarter of 1997, and therefore the number of sample acquisitions was reduced to 84[10]. Moreover, while the acquisition of *BARTON* by *EVERED* was in the initial list of the companies with complete data, it was excluded due to the lack of data for the year 1990 from *Companies House* database. For the same reason we excluded the acquisitions of *Gabbicci* by *Helene* and *Hawker Sidley* by *BTR*[11]. Finally, *Thames* was purchased by *Thorn EMI* in 1991 and then it was sold to *Pearson* in 1993, and for this reason these two acquisitions were excluded from the sample. Thus, the final number of acquisitions in examination for the period from the beginning of 1990 to the end of 1996 is **79** (table 5.20 in Appendix).

To avoid biases in cash flow returns, arising from cash that may have been used for another significant acquisition than that in question, requires an examination not only of the purchasing behaviour of the sample companies in the domestic market but also of their international purchasing activity. Therefore, the possibility that an acquirer made an international and 'significant' acquisition was also examined. The source was again *Acquisitions Monthly*[12].

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[8] This depends on what is the year of the completion of the merger and how many years prior to and after the event the performance is examined.

[9] National Library of Scotland provides *Acquisitions Monthly* issues from 1990 onwards.

[10] We excluded from our sample the acquisition of Unitech by Siebe which took place in 1996.

[11] While data for those companies appeared to be complete in CH database, their Pdf files were corrupted for some years.

[12] The sample of the 83 bidders and targets that participated in the corresponding acquisitions was compared with the relevant section in the Periodical where all the UK bidders that made an international acquisition are quoted along with their size in terms of sales, the value of the acquisition, and the size and the nationality of the target.

It was found that in the period from the beginning of 1990 to the end of 1996, 156 such acquisitions were made by the sample companies for which at least some details of the transaction were disclosed. The vast majority of the 156 bids come from the sample bidders and only a few from the sample targets. Moreover, it is obvious from the table 5.21 in Appendix, that in the specific time period most of the sample companies which were engaged in international takeover activity disposed to a relatively small amount of their cash in comparison to their size measured by sales. In other words, most of the sample companies took part in insignificant international acquisitions, in the sense described above. Where the target's sales size was not available the definition of a significant acquisition was modified so as to include acquisitions whose value exceeded one third of the bidder's sales. Still, significant acquisitions were not absent.

In total, from the 156 international transactions made by the sample companies, 12 were significant in the sense that either the value of the international acquisition exceeded that of the domestic acquisition made by the same bidder, or the foreign target's sales value exceeded one third of the sales value of the bidder, while the domestic acquisition made by the respective bidder was much smaller.

It is noteworthy that the 12 sample companies made 62 international acquisitions within the period of study, i.e. 40% of the total number of international takeovers was made by the 12 sample companies. However, most of them, if not all of them, could not be characterised as strategically important, neither did such acquisition decisions have substantial impacts on the cash flow to the domestic parent company for a number of reasons. First, while the 12 aforementioned acquisitions 'violate' the criteria that were set to categorise a takeover as insignificant, in fact they represent only a part of a persisting managerial behaviour of acquiring foreign companies. Second, none of them is what is usually called a 'mega-merger', which means that in absolute terms these acquisitions can be characterised as small ones. Third, from information retrieved from *Acquisitions Monthly* many of them represent purchasing decisions taken by the mother company in order to support the activities of its foreign subsidiaries or as a step for expansion into foreign markets where a subsidiary was already in operation.

Therefore, given the nature of the international acquisitions conducted by the sample companies it was not considered necessary to further reduce the sample of the domestic acquisitions from 83 to 71. Such a reduction would not be necessarily offset by more robust final results. A summary of the sample construction is provided in Table 1.

Table 1: Summary of the Sample Construction Process

Number	Description	
205	Acquisitions between Public Companies from *Acquisitions Monthly*	
-11	Utilities & transport sectors (bidder or target)	
-12	Real Estate Investment (bidder or target)	
= 182		
-123	Incomplete Data (see breakdown below)	
	-42	Target with 5 year window – bidder with no data in DS
	-5	Target with 3 year window – bidder with no data in DS
	-3	Target with data for less than 3 years - bidder with no data in DS
	-8	Bidder with 5 year window – target with no data in DS
	-5	Bidder with 3 year window – target with no data in DS
	-4	Bidder with data for less than 3 years – target with no data in DS
	-10	No data for neither bidder nor target
	-46	Incomplete
= 59	**Total with data from DS, with complete 5 or 3-year window (see breakdown below)**	
	40	Where both bidder & target have 5 year window
	19	Where both bidder & target have 3 year window
From *Companies House* (by completing data for companies from the 123 acquisitions with incomplete data from DS)		
+ 38	With a complete 5 or 3-year window (see breakdown below)	
	17	With 5-year window
	21	With 3-year window
=97	**Total with a complete 5 or 3-year window from DS and Comp. House**	
-12	Removed due to multiple acquisitions from bidder	
=85		
-2	Firms involved in purchase and resale within the examined period	
-2	Bidder performed significant acquisition in 1997	
-2	Incomplete Companies House data for year 1990	
= 79	**FINAL TOTAL**	

The allocation of acquisitions across the years under examination is illustrated in the following table:

The sample consists of 158 companies – 79 bidders and their respective targets – corresponding to 79 acquisitions that took place within the period from the 1st of January 1990 until the 31st of December 1996.

YEAR	No OF ACQUISITIONS
1990	12
1991	22
1992	5
1993	8
1994	8
1995	16
1996	8
TOTAL	79

In the sample 16 acquisitions were financed by cash, 22 were financed by stock and 42 acquisitions were financed by a combination of cash and stock (tables 5.21, 5.22, and 5.23 respectively, in Appendix). There were also 18 hostile acquisitions and 61 friendly (Tables 5.24 and 5.25 respectively in Appendix). The acquisitions where the acquiree and the acquirer belonged to the same Level 5 Industrial Sector one year prior to acquisition were found to be 52, while the acquisitions where the acquiree and the acquirer belonged to different Level 5 Industrial Sectors one year prior to acquisition were found to be 27 (tables 5.26 and 5.27 respectively, in Appendix). The Strategic acquisitions were 29 (table 5.28, in Appendix). The acquisitions that closed at a discount were 27 and the acquisitions where the acquirer paid a relatively high premium for the acquiree were also 27 (tables 5.29 and 5.30 respectively, in Appendix). Finally, we separated the sample into two sub-samples: one consisting of the 38 largest acquisitions and one consisting of the 38 smallest acquisitions (tables 5.31 and 5.32 respectively, in Appendix).

5.3. Industrial Sector Data.

Measuring and comparing performance prior to and after a takeover requires a reliable benchmark of reference. As has been analysed in the previous chapter, the performance of portfolios of companies belonging to the same industrial sector as that of the acquirer and the acquiree was used as a benchmark for each of the years under examination. To put it more simply, the industrial sector to which each acquirer and acquiree belonged was identified one year before and one year after the merger completion so as to capture any changes in the acquirer's industrial classification due to any possible changes in its business operations after the merger. The performance of the respective companies in each sector was then used as a performance benchmark for a period of 3 or 5 years before and after the merger[13].

The main source of sector data was Datastream. Initially, the Level 5 industrial classification of the companies that took part in the 83 takeovers of the sample was identified in Datastream's database. Datastream's industrial classification is broadly the same as that of the L.S.E. industrial classification. At a second step, all the company names that belonged to each sector were retrieved, and then all equivalent industry data for all accounting and market value data required for the target and the bidder were collected.

The Level 5 industrial classification was considered more appropriate than level 4 industrial classification because it ensures an adequate number of companies in each relevant sector for all the years in question as a benchmark portfolio. Although Datastream does not give data for all the listed companies in every single industry, it includes approximately 90% - 95% of the total number of firms for each sector, in terms of market capitalisation.

A major drawback of DataStream as a source of industry data is that it does not provide historic data regarding industrial classification. In other words, it fails to

[13] In fact, few sample companies changed industrial sector at some point earlier than the previous year of the merger completion or later than the following year after the merger completion and within the period under examination. To keep industry data handling manageable and time effective, it is assumed that the industrial sector in which a sample company belongs one year before the merger completion is broadly the same during all the 3 or 5 years before the year of the merger completion. Similarly, the industrial sector in which an acquirer belongs one year after the merger is assumed the same for all the period in examination after the year of the merger completion.

deliver information as to which Level 5 sector a bidder or a target belonged to in the past[14]. Datastream only provides the industry classification in the year this information is requested[15]. This causes a problem in that it is not possible to create benchmarks of performance consisting of companies classified in industrial sectors through the years that this study extends from DataStream. In addition, it is not possible to identify the industrial sector to which a sample company belonged 1 year before the merger and 1 year after it. To overcome this problem the *Stock Exchange Year Book* was employed as an additional source of data.

Starting from Datastream's Level 5 sector allocation of the sample companies, 21 Level 5 industries were retrieved from Datastream's database for the year 2002. The Standard Industrial Classification of the Stock Exchange Yearbook was then used to 'build' the relevant sectors through the years from 2002 back to 1985. This period was chosen so as to include the maximum time under examination – i.e. a five-year window – for the takeovers of the sample that took place from the beginning of 1990 until the end of 1996.

The 'building' of the industries for the years from 2002 back to 1985 was based on two criteria. First, for each Level 5 industry taken from DataStream for the year 2002 the appropriate companies were removed[16] in each subsequent year until 1985, having as a reference the Stock Exchange Yearbook's industrial classification. Second, it was considered crucial for the industry building and modification through the years to take into account the changes of Standard Industrial Classification that took place in the years 1999 and 1992 so that the 'nature' of the sectors remained the same across the years under examination[17]. Moreover, since the companies taken from DataStream according to the 2002 Level 5 industry classification accounted for 90%-95% of the total market capitalisation of each sector, it was ensured that for each of the companies removed

[14] Moreover, firms that are delisted from the London Stock Exchange because of bankruptcy or a takeover are not included in subsequent industry classifications and therefore, do not form part of the average (or median).
[15] In the case of this work the industrial classification was provided as in 2002.
[16] The same company may belong to different Level 5 Industrial Sectors in different years. Moreover, since new companies enter the lists of the Stock Exchange Year Book each year, when working backwards in constructing industrial sectors from 2002 to 1985, it is essential to remove those companies that are not listed before a certain year.
[17] The Level 5 industrial codes which were employed for each industry across the years from 2002, back to 1985 are illustrated in Table 5.33, in Appendix.

in a specific year as many other companies as possible were added[18]. However in some cases, where only a few companies belonged to a sector, the additions made were few, and consequently the sector remained 'thin'.

In total, accounting and market capitalisation data were retrieved for **1398** companies that were distributed across 21 industries. Some industries that contained very few companies across the years were merged to ensure a sufficient number of observations when extracting the median values of industry cash flow returns. Thus, Level 5 sector 21, 'aerospace', and Level 5 sector 18, 'steel', were included in Level 5 sector 26, 'Engineering & Machinery'. The criteria for this unification were first, the relevant similarity of operations of companies belonging to these sectors and second, the fact that some companies were observed to be present interchangeably in some of these sectors across the years. This procedure reduced the number of Level 5 sectors from 21 to 19 (Table 5.35, in Appendix). Further to this aggregation of sectors at the initial stage of this research, two other cases of sector unification were carried out to make the statistical analysis as robust as possible by avoiding the presence of industrial sectors with very few companies. Thus, Level 5 sector 'Mining' (sector 4) was merged with sector 'Oil & Gas Exploration & Production' (sector 7), and Level 5 industrial sector 'Pharmaceuticals' (sector 48) was merged with Level 5 industrial sector 'Health' (sector 44). As a result, the number of Level 5 industrial sectors included in the statistical analysis was finally reduced to17.

As mentioned above, changes to Standard Industrial Classification occurred in 1992 and 1999. As a result, the performance of a number of sample companies could not be compared with the performance of companies belonging to a single sector since in such cases the sector disappeared in a year falling within the period of study. Companies belonging to such sectors were reallocated into other sectors with no explicit relation amongst them.

In detail, 15 bidders and 14 targets belonged to sectors that did not exist two or three years before or after the year of the completion of the merger (Table 5.34, in Appendix). To overcome such an abnormality produced by the different structure

[18] For all the companies that were added in each sector during the years in question accounting and market value data should be available in DS for at least some of the years in question.

of the Standard Industrial Classification system through the years before and after 1992 and 1999 the following assumptions were made:

1. The performance of companies belonging to sector *'Diversified Industrials'* (24) that existed for the years from 1993 until 1999 and *'Industrial Conglomerates'* (73) that existed for the years from 1985 until 1992, was compared with the performance of the companies which belonged to the sector *'Engineering'* (26) for the relevant years.
2. The performance of companies belonging to sector *'Miscellaneous Unclassified'* (76) [19] that existed for the years from 1985 until 1992 was compared with the performance of the companies of all the sectors participating in this study.
3. The sector *'Office Equipment'* (69), existed only from 1985 until 1992. From the description of sectors provided in the Stock Exchange Year Book, it is apparent that this sector included all the companies with business related to office furnishing, excluding computers. Therefore, the performance of the 2 targets of the sample that belonged to this sector were compared with the performance of the companies that belonged to sector *'Household Goods &Textiles'* (34).
4. The sector *'Plastic &Rubber'* (66), was present only through the years from 1985 until 1992. In addition, the sector was very 'thin' consisting of a maximum of 8 companies in each year. Therefore, the sector *'Chemicals'* (11) was used as a benchmark for the performance of the 2 targets of the sample that belonged to this sector.
5. It was not possible to compare the performance of companies that belonged to the sectors *'Publishing &Printing'* (53), *Packaging & Paper'* (54), and *'Printing, Packaging & Paper'* (28) with sector benchmarks consisting of their respective sector companies across all the years under examination. This was because companies of these sectors, and even whole sub-sectors, appeared interchangeably within different Level 5 sectors through the years. In addition, all these sectors were

[19] For the year 1985 the industrial sector *'Miscellaneous Unclassified'* is numbered in the Stock Exchange Year Book as 75. After 1985, until the year 1992, the same sector is numbered as 76.

present for a limited time period between the years 1985 and 2002, due to the changes of the Standard Industrial Classification Systems in 1992 and 1999[20].

6. The Level 5 sector *'Other Services & Businesses'* (51) exists only for the years from 1993 to 1995. There is only 1 bidder[21] in the sample that belonged to this sector. However, after 1996, this bidder belonged to Level 5 sector '*Media*' and after 1997 to Level 5 sector '*Household Goods & Textiles*' (34). Before 1993, the same bidder appeared to belong to sector '*Miscellaneous Unclassified*' (76). For these reasons, '*Other Services & Businesses'* sector (51), is not included in the list of Level 5 sectors that participate in this study, and the performance of the bidder belonging to it, is compared with the performance of the companies of all the sectors that were included in this study.
7. Finally, the performance of 1 target[22] which belongs to the sector *'Distributors, Other'* (41) is compared with the performance of all the companies of the sectors used in this study. This is because, the sector exists only after 1992, while before that year the relevant target belongs to sector (71) 'General Traders, Wholesalers & Distributors', which consists of few companies and accounting data are available for even fewer[23].

After the above allocations there were, effectively 18 benchmark portfolios: the 17 sectors described previously, plus 1 portfolio consisting of all companies of all the 17 sectors.

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[20] In detail, while sectors 'Printing' (53), 'Packaging & Paper' (54), and 'Publishing' (52) appeared separately in the period from 1985 to 1992, for the period from 1992 to 1999 Publishing (436) is a sub sector of Media (43) which is included in the list of Level 5 sectors used in this study. 'Paper Packaging & Printing' (28), on the other hand, stands alone as a different sector. Regarding the period from 1999 until 2002, 'Publishing and Printing' (547) is a sub-sector of the Level 5 sector 'Media & Photography' (54) while 'Paper' (156) is a sub-sector of the Level 5 sector 'Forestry & Paper' (15), which is not included in the list of Level 5 sectors participating in this study. Thus, the performance of the 4 targets and the 5 bidders that belong in any of the above sectors is compared with the performance of the companies of all the sectors participating in this study.

[21] The bidder is EFG Group PLC, which after 1996 changed name to Tandem Group PLC, while before 1990 its name was Economic Forestry Group PLC.

[22] Wills Group PLC acquired by Roxpur PLC in early 1995.

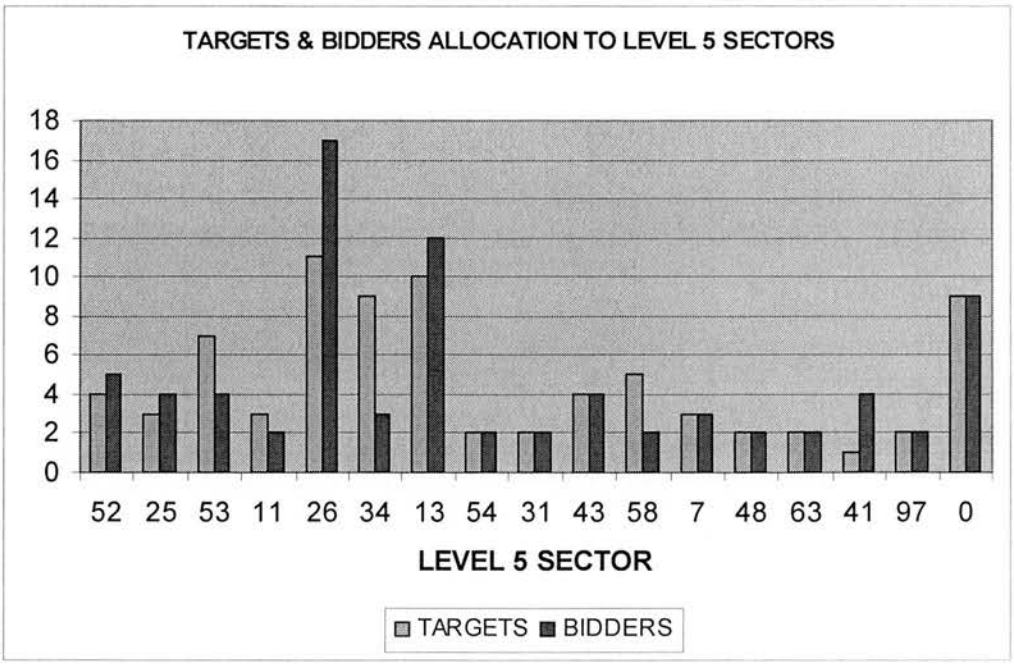
[23] Sector 71, 'General Traders, Wholesalers & Distributors', consists of 10 companies in the year 1992 and of 13 companies in 1991; data were available in Data Stream for 5 companies in the first case and for 8 companies in the latter.

In summary, the industrial sectors used in this study extent in a time from 1985 to 2002 so as to cover all the period under examination. In each year the necessary modifications were made to each sector in order that they were kept updated. In addition, because name and number labels of sectors changed more than once during the period under examination, and sectors were segmented or consolidated around the years 1992 and 1999 due to different Standard Industrial Classification Systems, the homogeneity of each sample sector[24] was ensured by grouping sectors with similar operations and classifying them with the respective sectors under the same category, before and after a date of a structural change (in 1992 and in 1999). Thus, for each sector retrieved from Datastream in 2002, there is only one group of companies corresponding to this sector across the whole period of this study. For example, as can be seen in Table 5.33 in the Appendix, what is referred to as the sector 'Construction & Building' (13) in 2002, corresponds to sectors (21) and (22) from 1999 back to 1992, and to sectors (13), (14), (15), and (18) from 1992 until 1985. Therefore, from this point onwards, when a sample company's sector is mentioned, it is referred to by its 2002 name, label and structure as retrieved from DataStream.

As mentioned previously, the performance of acquirers and acquirees that participated in this study, were compared with the performance of companies belonging to the 17 respective industrial sectors. Sample companies that could not be allocated into a single industrial sector across the years of examination, were compared with a portfolio consisting of the firms of all the 17 sectors, across the relevant years; this last portfolio of companies brings the number of performance benchmark portfolios to 18[25]. The allocation of the targets and the bidders into the 18 sector-portfolios is illustrated in the following bar chart:

[24] Before 1992 there were no Level 5 sectors and Level 4 sub-sectors in the Stock Exchange Year Book; there were only Level 4 sectors which, taken as groups, constituted the level 5 sectors after 1992. Therefore, by the phrase 'sample sector' we mean that regardless of how many level 4 sectors in 1991, for example, broadly constitute the equivalent of a Level 5 sector and its subsequent Level 4 sub-sectors in 2002, for the needs of this study it is assumed that there was only one Level 5 sector from 1985 to 2002. This is the 'sample sector' that constitutes the benchmark of reference for merging companies' performance.

[25] This portfolio functions in the same way as sectors in the sense that it constitutes a benchmark for the respective sample companies. For the needs of this study this portfolio is called 'General' and is represented in the bar chart by '0'.



The 2002 Level 5 Industrial Sector numeric code is represented in X-axis while the number of sample companies is represented in Y-axis.

A detailed illustration of how the sample companies are distributed across industrial sectors can be seen in table 5.36 in the Appendix.

5.4. Matched Firms' Data.

As discussed in the previous Chapter, apart from comparing merging firms' operating performance with that of their industry peers, a pair of matched firms for each acquiree and acquirer was also employed as an alternative operating performance benchmark for our sample companies. The matching criteria refer to industry relatedness, size and pre-acquisition performance. The precise selection criteria for matched firms were described in the Methodology Chapter.

We found 71 pairs of matched firms which satisfied the matching criteria which were set in the Methodology Chapter (Table 5.37, Appendix). For the remaining 8 acquisitions (out of the 79 sample acquisitions), either the acquiree or the acquirer could not be matched with a firm within the same Level 5 Industrial sector that had a similar size and operating cash flows (the 8 bidders and their respective targets are illustrated in table 5.38 in Appendix). For 66 out of the 71 pairs of matched firms, the acquiree's and the acquirer' matched firm's size fell within the range

from 25% to 200% of the size of the acquiree or the acquirer. For the remaining 5 acquisitions either the acquiree's matched firm or the acquirer's matched firm's size fell within the range of 25% to 400% of the size of the acquiree or the acquirer respectively (see table 5.37, in Appendix).

5.5. Conclusions.

In this Chapter, the sources from which data for this research were collected and the criteria for choosing the appropriate merging firms for examining their performance were illustrated. In addition, we presented the procedure by which the collected data were 'cleaned' so as to provide a complete and pure sample.

In order to increase our sample size so as to make our results as robust as possible and simultaneously to be able to exclude companies that do not satisfy our selection criteria in their strongest form, we used several data sources; namely, the *Acquisitions Monthly, the Datastream,* the *Companies House, the Financial Times,* and the *Stock Exchange Year Book.* This entailed the difficulty that different databases are not homogeneous in the format and the presentation of their data[26], and therefore, a considerable part of our final dataset was constructed manually so as to become appropriate for electronic manipulation.

The nature of our research required not only a large and complete portfolio of control firms to compare the operating performance of our sample firms with but also a portfolio of control firms that ensures the consistency of the comparisons through several years. To this end, it was necessary to study the allocation of all public firms into industrial sectors from the year 1985 to the year 2002 and to manually construct control firms' portfolios with complete data for each year, since to the best of our knowledge no electronic database for academic purposes in the U.K. provides for historic company data that refer to industrial classification. Moreover, we followed industrial definitions through these years to ensure that prior to and after the changes in Standard Industrial Classification that occurred in 1992 and 1999 our portfolios of control firms were consistent with the old and new industrial definitions.

[26] Companies House, for example, provided companies' accounts as they were issued from the companies in a PDF format while Datastream presents accounts in Excel format. The Financial Times past issues were available at Edinburgh's University Library in the form of microfilms, while information from the Stock Exchange Year Book was available in a 'hard' format from Edinburgh's University Library.

Much of the academic controversy about the effects of M&As on corporate performance focuses on the quality and the completeness of the data that are used in studying post-merger performance. Moreover, the choice of the appropriate benchmark and its accuracy so as to reflect the 'normal' returns is also considered essential for judging whether takeovers improve operating performance. Therefore, in this study, we attempted to construct a sample of U.K. takeovers which was as 'pure' as possible from other events which may distort the results in the period under examination, and we paid great attention to the construction and the completeness of our benchmarks against which abnormal performance is measured.

CHAPTER 6.

INDUSTRY BENCHMARKED OPERATING PERFORMANCE: RESULTS AND ANALYSIS.

6.1. Introduction.

This chapter deals with the results that are produced after applying the methodology which was described in chapter 4 on the dataset that was illustrated in chapter 5. Specifically, the pro-forma median industry adjusted operating performance of targets and bidders for each of the 5 financial years preceding the acquisition announcement is compared with the median industry adjusted operating performance of combined firms for each of the 5 financial years following the acquisition completion. In addition, using the same benchmark, i.e. the industry operating performance, the median change in operating performance between the pre-merger years and the post-merger years is illustrated. The change in the two major components of cash flows – sales and operating costs – is also reported to provide an indication of how these components change in the post merger years with changes in performance.

The structure of this chapter is as follows: in Section 2, the average change in performance is discussed for the 79 sample companies. In Section 3, the average changes in performance of companies that share common merger characteristics are reported. These characteristics include the mode of payment, the industry relatedness and the attitude of each target's management towards the acquisition offer. In Section 4, the performance of strategic acquisitions is presented. In Section 5, having segmented the sample into two sub-sets – one that includes acquisitions that took place at a premium and another that includes acquisitions that took place at a discount - the performance of each sub-set is reported. In Section 6, the performance results for small and large acquisitions in the sample are discussed. Finally, in Sections 6 and 7 we report regression analysis results using the Regression Model and the Change Model respectively.

6.2. Operating Performance of the Sample Companies.

In Table 1 panel A[1], column 2 reports the median annual operating performance of the 79 combined target and bidders for each of the 5 years preceding the acquisition and each of the 5 years following the acquisition, with the year of the acquisition completion being excluded. Before the merger, the combined firm's median operating cash flow returns on assets falls within the range of 17.91% in year -4 and of 15.66% in year -2.

After the merger, it is clear that there is a sharp decline in performance in year 1 with the operating cash flow returns on assets being around 13% and in the second post-merger year being 12.56%. In years 3, 4, and 5 there is a steady improvement in operating performance with the respective numbers being 13.31%, 14.12%, and 15.91%. It is interesting that in year 5, operating performance is approaching the pre-merger levels. However, looking the median annual performance for years -5 to -1 on aggregate[2] and the median annual performance for years 1 to 5 in aggregate, it is explicit that there is deterioration in the post-merger years. The median performance for all the pre-merger years falls from 16.44% to 13.39% in the post-merger years.

This decline in performance, however, cannot be definitely attributed to the merger since it can arise due to factors that are irrelevant to it. If there is a downward trend in industry cash flow returns in the same period, for example, this may affect the merging firms as well.

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[1] Operating performance is measured as the operating cash flow returns on total assets. Operating cash flows are computed as sales, minus cost of goods sold, minus selling and administrative expenses, plus depreciation and goodwill expenses. Total assets are the market value of equity plus the book value of net debt and preferred stock at the beginning of each financial year. Changes in market values of equity of the acquirer and the acquiree at the merger announcement are excluded from the asset base for the post-merger years. Industry-adjusted cash flow returns are calculated as the difference between each firm's value for each year and the median value of other firms in the same industry as it is defined by the S.I.C. Pro forma pre-merger returns for the acquirer and the acquiree are computed as the weighted averages of acquirer and acquiree returns, with the weights being the relative asset values of each firm at the beginning of each financial year. Post merger returns are computed using data for the merged firms. Pre-merger Industry Adjusted returns are weighted averages of acquirer and acquiree industry median returns, with the weights being the relative asset values of the acquirer and acquiree firms at the beginning of each financial year. In the absence of separate asset values for the two merging firms in the post-merger years the weights used to compute industry adjusted operating returns are the relative asset values of the acquirer and the acquiree firms at the beginning of year -1.

[2] The sample median operating cash flow return on assets for years -1 to -5 is calculated after computing the median return in each of these years for each sample firm. The sample median then, is the median of these values. The sample median returns for the post-merger period is calculated similarly.

TABLE 1.

Median Annual Operating Performance for the 79 combined target and acquirer firms in years surrounding mergers completed in the period 1990-1996.

Panel A[1].

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		% postitive	Number of observations
-5	17.35%	-0.44%		45.95%	37
-4	17.91%	1.15%		54.05%	37
-3	15.78%	0.12%		50.63%	79
-2	15.66%	-0.59%		45.57%	79
-1	16.32%	0.20%		51.90%	79
Median Annual Performance for years -5 to -1	16.44%	-0.09%		49.52%	311
1	13.07%	-1.17%		41.77%	79
2	12.56%	-1.50%	**b**	35.44%	79
3	13.31%	-0.74%		41.77%	79
4	14.12%	-0.33%		45.95%	37
5	15.91%	0.99%		62.16%	37
Median Annual Performance for years 1 to 5	13.39%	-0.83%	**b**	43.09%	311

Panel B[3].

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	0.20%	
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	0.22%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 0.89%	**b**
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-1.01%	
Δ (IAOP) Year -1, Years 2, 3	-0.85%	
Δ (IAOP) Years -1, -2, -3 , Years1, 2,	-0.82%	
Δ SALES	14.52%	**a**
Δ Operating Costs	16.78%	**a**
Δ Employee costs per Sales	0.85%	**b**
Δ Number of employees per thousand of sales	-0.32%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.

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[3] **Δ (IAOP)** is the median of the difference in median industry-adjusted cash flow return between the post- and pre-acquisition periods for all the sample firms.

Δ (SALES) is the median of the change of each firm's median sales between the post- and pre- acquisition periods, for all the sample firms.

Δ (Operating Costs) is the median of the change of each firm's median operating costs between the post- and pre- acquisition periods for all the sample firms.

Results reported in column 3 refer to industry adjusted operating performance which is the difference between values for the merged firms and their weighted-average industry median estimates. Thus, the benchmark each merging firm's operating performance with the industry operating performance correct for the problem mentioned above. The median annual operating performance for the pre-merger years ranges from 1.15% to -0.59% with none of the differences between the firms' values and industry performance being statistically different from zero. We cannot therefore reject the idea that for each of the pre-merger years the median operating performance of the combined targets and bidders is at their industry levels. This is clearer when looking at the median annual performance for the years -1 to -5 (i.e. the sample median operating performance for the whole pre-merger period). The median difference between firms' and industries' performance is a statistically insignificant -0.09%.

In the post-merger years, however, there is a sharp decline in performance of -1.17% in year 1, which becomes a statistically significant -1.50% in year 2. This figure is statistically significant at the 5% significance level using a two-tailed Wilcoxon ranking test (p-value 0.024). The positive observations fall from 41% in year 1 to 35.44% in year 2. In year 3 the difference is still negative (-0.74%) but insignificant. In year 4 there is a further improvement in performance with the difference being -0.33% and insignificant which becomes a positive but insignificant 0.99% in year 5. The sample median for the whole post-merger period is a negative and statistically significant value of 0.83%. This is significant at the 5% significance level (p-value 0.03). This result indicates that merging firms, on average, underperform their industries in the post-merger years.

Similar results are produced when the Change Model is employed for examining merger performance, as reported in Table 1, Panel B. The median industry adjusted performance for all the three pre-merger years – i.e. for the years -1, -2 and -3 – is 0.22% and insignificant, suggesting that merging firms perform around industry standards in the pre-merger period. Median operating performance for years 2 and 3 is -1.01% but statistically insignificant while the median performance for years 1, 2, and 3 is -0.89% which is statistically significant at a 5% significance level (p-value 0.047). The change in median industry adjusted operating performance

between the 3 pre-merger years and the 3 post-merger years is -0.82% , and the change between year -1 and years 2 and 3 is -0.85%, both statistically insignificant.

The results indicate performance deterioration after merger although in the change model the difference in performance between post- and pre-merger periods, while negative, is insignificant. Nonetheless, inferring from the sample companies it cannot be argued that, on average, mergers improve performance.

An interesting finding is that in the three post-merger years, while sales increase by a statistically significant 14.52%, operating costs increase at a higher rate, i.e. by 16.78% (significant) in comparison with the three pre-merger years. This finding, along with the dramatic decline in performance in the first two years after the merger and the subsequent slight improvement in years 3, 4, and 5 may indicate that mergers, on average, represent investment decisions with adverse economic consequences at least for the first post-merger years. Merging organisations may face tangible and intangible costs in the first post-merger years that more than offset any synergistic gains. As time passes, however, performance improves suggesting that the combined entity manages to overcome the inefficiencies that may have caused performance deterioration in the first years.

6.3. Operating Performance for Mergers that Share Common Characteristics.

In this section, we focus on different types of transactions that are very often cited in the literature as important factors affecting merger success or failure. Such characteristics include the method of payment, the industry relatedness between bidders and targets and whether the acquisition is friendly or hostile. Employing as the performance metric of the operating cash flow returns on assets, the average performance of different subsets of the sample with each of the above characteristics is examined.

6.3.1. The Method of Payment.

There is plenty of empirical evidence suggesting that acquirers that finance acquisitions by cash perform better than acquirers that use stock in acquisition transactions. This evidence is consistent with the information asymmetry theory and

supports the assumption that cash signals high levels of managerial confidence for the investment success. Cash financing is also an indication of an acquirer's willingness to bear all the risk of the acquisition project and to be in a position to reap all the prospective benefits from it. Much of this evidence comes from share price performance studies in the announcement period. In this section, the combined firm operating performance for a 5 and 3 year period before and after the merger is reported. The results indicate a dramatic decline in operating performance in the 3 and 5 years after the merger when the mode of payment is cash and an insignificant decline when the mode of payment is stock or a combination of stock and cash.

In table 2 Panel A, the median annual operating performance for the 16 sample companies where the mode of payment was solely cash is illustrated. In the pre-merger years, sample companies' operating performance ranges from 15.09% to 16.82%[4] while after the merger performance falls to 10.94% in year 1, to 12.41% in year 2 and to 10.71% in year 3. More interestingly, the median industry adjusted operating performance (column 3) while it is positive in the pre-merger years (though statistically insignificant), after the merger it is highly negative. In year 2 it is -2.80% and statistically significant at a 5% significance level (p-value 0.023) with only 25% of the observations being positive and in year 3 it is -2.46 and significant at a 10% significant level (p value 0.088) with 31.25% of the observations being positive. Panel B of Table 2 reports the median change in operating performance between the 3-year post- and pre-merger periods and the median change in operating performance between years 2 and 3 and the year -1. The difference is highly negative but statistically insignificant. The median industry adjusted operating performance for the 3 pre-merger years is 0.75% but statistically insignificant. In contrast, in all the 3 post-merger years the median industry adjusted operating performance is -1.67% and significant at a 10% significance level (p-value 0.088). The median performance of the second and third post-merger years is -2.40%, significant at a 5% significance level (p value 0.049).

[4] Actually, in the year -5 the median annual operating performance is 28.33%. However, this figure represents only 4 observations since there are only 4 companies with data for a 5-year window that were financed with cash. Therefore, this figure cannot be representative of the whole sample. The purpose for including all the observations for a 5-year window in Table 2 is to compute the sample median performance for the whole pre-merger and post-merger periods. In Table 3 the sample is examined for a 3-year window to compare results.

TABLE 2

Median Annual Performance for the 16 acquisitions where the method of payment was cash.

Panel A[5].

Pre and Post-Merger Operating Cash Flow Returns

		Industry - Adjusted			
Year Relative to Merger	Firm Median	Median		% postitive	Number of observations
-5	28.33%	6.56%	c	100.00%	4
-4	16.82%	1.51%		75.00%	4
-3	16.00%	0.56%		56.25%	16
-2	17.14%	1.70%		56.25%	16
-1	15.09%	0.29%		62.50%	16
Median Annual Performance for years -5 to -1	16.31%	0.63%		62.50%	56
1	10.94%	-2.71%		31.25%	16
2	12.41%	-2.80%	b	25.00%	16
3	10.71%	-2.46%	c	31.25%	16
4	14.40%	-0.46%		25.00%	4
5	12.81%	0.62%		75.00%	4
Median Annual Performance for years 1 to 5	11.99%	-2.17%	a	32.14%	56

Panel B[6]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	0.29%	
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	0.75%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 1.67%	c
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-2.40%	b
Δ (IAOP) Year -1, Years 2, 3	-3.79%	
Δ (IAOP) Years -1, -2, -3 , Years1, 2, 3	-3.60%	
Δ SALES	14.92%	
Δ Operating Costs	16.71%	
Δ Employee costs per Sales	1.74%	b
Δ Number of employees per thousand of sales	-0.11%	a

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[5] See footnote 1.
[6] See footnote 3.

In Table 3, it can be seen that the median annual industry adjusted operating cash flow return on assets of the sample, falls from 0.38% in the 3 pre-merger years to a statistically significant (at a 1% significance level) of -2.80% in the three post-merger years.

TABLE 3
Median Annual Performance for the 16 acquisitions where the method of payment was cash.

Panel A[7]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		Industry - Adjusted % postitive	Number of observations
-3	16.00%	0.56%		56.25%	16
-2	17.14%	1.70%		56.25%	16
-1	15.09%	0.29%		62.50%	16
Median Annual Performance for years -3 to -1	16.11%	0.38%		58.33%	48
1	10.94%	-2.71%		31.25%	16
2	12.41%	-2.80%	**b**	25.00%	16
3	10.71%	-2.46%	**c**	31.25%	16
Median Annual Performance for years 1 to 3	11.69%	-2.80%	**a**	29.17%	48

The median annual operating performance of the 21 sample companies that issued stock for financing an acquisition is illustrated in table 4. Results in Panel A, indicate that both in the pre- and the post-merger period industry adjusted operating performance is around industry standards. The median of the difference between sample firm annual operating performance and the industry median operating performance is indistinguishable from zero in both the 5 year pre-merger period and the 5 year post-merger period. Similarly, results produced using the Change model (Panel B) indicate a statistically insignificant change of the median annual operating performance of the sample between the post- and pre-merger periods.

[7] See footnote 1.

TABLE 4

Median Annual Performance for the 21 acquisitions where the method of payment was stock.

Panel A[8]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		Industry - Adjusted % postitive	Number of observations
-5	19.56%	2.84%		66.67%	9
-4	22.91%	4.28%	c	77.78%	9
-3	14.89%	-2.65%		42.86%	21
-2	14.28%	-2.61%		42.86%	21
-1	14.94%	-2.12%		38.10%	21
Median Annual Performance for years -5 to -1	15.51%	-0.91%		48.15%	81
1	13.64%	-1.39%		38.10%	21
2	14.00%	-1.40%		38.10%	21
3	13.98%	0.84%		52.38%	21
4	14.44%	0.15%		55.56%	9
5	14.64%	2.74%		66.67%	9
Median Annual Performance for years 1 to 5	14.17%	-0.85%		46.91%	81

Panel B[9]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	-2.12%	
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	- 0.91%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 0.89%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	1.78%	
Δ **(IAOP)** Year -1, Years 2, 3	-0.15%	
Δ **(IAOP)** Years -1, -2, -3 , Years1, 2, 3	0.33%	
Δ **SALES**	23.49%	
Δ **Operating Costs**	28.35%	
Δ **Employee costs per Sales**	1.23%	**a**
Δ **Number of employees per thousand of sales**	-0.29%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[8] See footnote 1.
[9] See footnote 3.

However, as far as Panel A is concerned, because there are only 9 acquirers with data available for a 5 year window that financed their acquisitions with stock, the median annual operating cash flow returns on assets for years -5, -4 and 4 and 5 is based on a very small number of observations. This may have distorted the reliability of the results and statistical tests referring to the respective years. For this reason, in Table 5 we illustrate the operating performance of the 21 companies that used stock to finance their acquisitions for a 3 year window (in this case 9 observations are missing for each of the years -5, -4, 4 and 5, i.e. a total of 36 observations, from the estimation of median performance for the whole 5 year pre- and post-merger periods).

As it can be seen in Table 5, unadjusted performance of merging firms does not change dramatically between the pre- and post-merger periods. In the three pre-merger years it ranges from 14.28% to 14.94% while in the post-merger period it is 13.64% in year 1, and increases to about 14% in years 2 and 3. The median annual industry adjusted operating performance however, increases from negative and statically significant -2.46 % in the 3 year pre-merger period to an indistinguishable from zero -1.32%. In other words, there is an improvement in performance after the merger.

A noteworthy element of these results is that acquirers and acquirees that proceeded with a stock transaction underperform their industry peers in the 3 year pre-merger period and their performance approaches their industry standards in the 3 year post-merger period. Since most of the stock acquisitions, in general, and in the sample, are friendly[10], this may indicate that companies which underperform their industry peers proceed with agreed acquisitions that are financed by stock to strengthen their competitive position and improve performance. Stock is considered as a 'cheap' means of payment since it mitigates the impact of any valuation errors in the transaction and it also allows for the risk of the project to be shared between the acquirer's and the acquiree's shareholders.

[10] 16 out of the 21 acquisitions that are financed by stock are friendly.

TABLE 5

Median Annual Performance for the 21 acquisitions where the method of payment was stock. The period in examination is a 3-year window around merger completion, the year of completion not being included.

Panel A[11]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		% postitive	Number of observations
-3	14.89%	-2.65%		42.86%	21
-2	14.28%	-2.61%		42.86%	21
-1	14.94%	-2.12%		38.10%	21
Median Annual Performance for years -3 to -1	14.69%	-2.46%	**b**	41.27%	63
1	13.64%	-1.39%		38.10%	21
2	14.00%	-1.40%		38.10%	21
3	13.98%	0.84%		52.38%	21
Median Annual Performance for years 1 to 3	13.98%	-1.32%		42.86%	63

b- Significant at the 5% significance level using a two-tailed test.

In Table 6, the post-merger operating performance for the 42 acquirers and acquirees that merged after an offer proposal which included both stock and cash as a means of payment in the transaction is illustrated. Pre-merger operating performance of the combined target and bidder is about the same as that of their industry peers, since the median of the differences between sample firms' operating performance and the weighted average of their industry median operating performance is statistically indistinguishable from zero. Post-merger performance remains at the same levels, i.e. there is not an improvement but there is not a decline either.

[11] See footnote 1.

TABLE 6

Median Annual Performance for the 42 acquisitions where the acquirer offered a choice between cash and stock to the target's shareholders.

Panel A[12]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median	% postitive	Number of observations
-5	15.31%	-2.07%	29.17%	24
-4	17.51%	-1.31%	41.67%	24
-3	16.02%	0.29%	52.38%	42
-2	16.36%	-0.95%	42.86%	42
-1	17.66%	0.57%	54.76%	42
Median Annual Performance for years -5 to -1	16.89%	-0.59%	45.98%	174
1	13.18%	-0.30%	47.62%	42
2	12.36%	-1.68%	38.10%	42
3	13.19%	-0.56%	40.48%	42
4	13.45%	-0.31%	45.83%	24
5	16.20%	1.69%	58.33%	24
Median Annual Performance for years 1 to 5	13.16%	-0.46%	44.83%	174

Panel B[13]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	0.57%
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	0.05%
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 0.67%
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-0.52%
Δ **(IAOP)** Year -1, Years 2, 3	-0.67%
Δ **(IAOP)** Years -1, -2, -3 , Years1, 2, 3	-0.83%
Δ **SALES**	9.36%
Δ **Operating Costs**	13.76%
Δ **Employee costs per Sales**	0.08%
Δ **Number of employees per thousand of sales**	-0.44% **a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.

[12] See footnote 1.
[13] See footnote 3.

Similar results are also provided by the Change model. In panel B, the median of the difference in operating performance between the 3 post- and the 3 pre-merger periods is -0.83%, but statistically insignificant. The median of the difference in performance between years 2 and 3 and year -1 is 0.67% and also statistically insignificant. In the 3 years post-merger period the median sales increase is 9.36% in relation to the 3 years pre-merger period, while the median change in the operating costs for the same periods is 13.76%.

Unlike Powell and Stark (2005), the results in this study indicate that the method of payment has a significant impact on post-merger performance. Indeed, when acquirers use cash to finance acquisitions there is a dramatic decline in performance in both the 3 and 5 years following merger completion. When the mode of payment is stock or a mix of stock and cash, performance remains at industry standards in the post-merger period. There is evidence that stock-financed mergers are conducted by firms that underperform their industry peers in the pre-merger years and that they manage to improve performance up to their industry levels in the 3 year period following acquisition completion. Considering that the average outcome of mergers in the sample was found to be negative, it can be said that stock and stock and cash acquisitions perform better than cash acquisitions.

6.3.2. The Target's Management Attitude.

In the sample 18 deals that were characterised as hostile and 61 that were characterised as friendly were identified. Following the classification as it was made by the main source of the data, the *'Acquisitions Monthly'*, a deal is considered as 'friendly' when the acquisition was agreed between the target's and bidders' managements after negotiations. A hostile acquisition is one where bidder's management made a tender offer directly to the target's shareholders without the agreement of the target's management.

The annual median pre- and post-merger operating performance of the 18 hostile transactions are reported in Table 7 Panels A and B. As illustrated in Panel A, unadjusted operating performance declines in the post-merger years in relation to

TABLE 7

Median Annual Performance for the 18 hostile acquisitions.

Panel A[14]

Pre and Post-Merger Operating cash flow returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		% postitive	Number of observations
-5	17.46%	-1.22%		50.00%	10
-4	19.14%	0.73%		50.00%	10
-3	19.08%	0.80%		55.56%	18
-2	18.14%	0.70%		55.56%	18
-1	15.91%	-1.88%		44.44%	18
Median Annual Performance for years -5 to -1	17.76%	0.15%		51.35%	74
1	12.03%	-2.16%		38.89%	18
2	12.39%	-2.17%	**b**	27.78%	18
3	12.12%	-1.12%		33.33%	18
4	14.40%	-0.17%		50.00%	10
5	15.47%	0.73%		60.00%	10
Median Annual Performance for years 1 to 5	12.70%	-1.09%	**b**	39.19%	74

Panel B[15]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	-1.88%	
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	-0.45%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 1.01%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-1.81%	**c**
Δ (IAOP) Year -1, Years 2, 3	-0.22%	
Δ (IAOP) Years -1, -2, -3 , Years1, 2, 3	0.31%	
Δ SALES	4.86%	
Δ Operating Costs	3.56%	
Δ Employee costs per Sales	1.35%	
Δ Number of employees per thousand of sales	-0.53%	**a**

c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.

[14] See footnote 1.
[15] See footnote 3.

pre-merger period. After year 3, however, there is a gradual improvement and it approaches the levels of year -1. As far as the median annual industry adjusted operating performance is concerned, while sample firms that engaged in hostile acquisitions enjoyed a performance that was indistinguishably different from that of their industry peers in the pre-merger years, they experienced a decline in the first 3 post-merger years with the year 2 industry adjusted operating performance being -2.17% and statistically significant at a 5% significance level. In years 4 and 5 there is an improvement towards industry standards. Nonetheless, the sample median annual industry adjusted operating performance for the whole 5 year post-merger period is negative -1.09% and statistically significant at a 5% significance level. Results produced using the Change model (Panel B), however, indicate that the median change in performance between the three post-merger years and the three pre-merger years is statistically indistinguishable from zero. This is also the case for the median change in operating performance between the second and third post-merger years and year -1. Interestingly, and unlike the average outcome of the sample mergers, the change in sales between the post- and pre-merger periods is higher than the change in operating costs (4.86% vs. 3.56%).

As far as the operating performance of the 61 friendly takeovers is concerned, the results are illustrated in Table 8.

Column 2 of Panel A shows the unadjusted median annual operating performance for the combined target and bidders that conducted friendly acquisitions. Operating performance declines in the first and second post-acquisition years, and gradually improves in years 3, 4 and 5. However, in all the post-merger period the combined firms' median annual operating performance is lower (13.90%) than that of the pre-merger years (16.25%). The third Column reports the median annual industry adjusted operating performance of the firms. Performance is negative but statistically insignificant in the 4 post-merger years. After the second year it is gradually improves to become positive (though statistically insignificant) in year 5, with 62.96% of the sample observations being positive. The sample median annual operating performance for all the five post-merger years is close to industry levels.

TABLE 8

Median Annual Performance for the 61 acquisitions where the acquirer made an agreed offer to the acquiree.

Panel A[16]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median	Industry - Adjusted % postitive	Number of observations
-5	17.35%	-0.44%	44.44%	27
-4	17.60%	1.15%	55.56%	27
-3	15.74%	-0.11%	49.18%	61
-2	14.28%	-0.91%	42.62%	61
-1	16.68%	0.37%	54.10%	61
Median Annual Performance for years -5 to -1	16.25%	-0.11%	48.95%	237
1	13.64%	-0.95%	42.62%	61
2	12.56%	-1.49%	37.70%	61
3	13.68%	-0.74%	44.26%	61
4	14.10%	-0.33%	44.44%	27
5	15.91%	0.99%	62.96%	27
Median Annual Performance for years 1 to 5	13.90%	-0.74%	44.30%	237

Panel B[17]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	0.37%
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	0.22%
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 0.83%
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-0.47%
Δ (IAOP) Year -1, Years 2, 3	-1.01%
Δ (IAOP) Years -1, -2, -3 , Years1, 2, 3	-0.83%
Δ SALES	21.50%
Δ Operating Costs	21.54%
Δ Employee costs per Sales	0.78% **c**
Δ Number of employees per thousand of sales	-0.25% **a**

a- Significant at the 1% significance level using a two-tailed t Wilcoxon est.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[16] See footnote 1.
[17] See footnote 3.

Panel B illustrates the median of the differences between post- and pre-merger periods. The median difference in annual industry adjusted operating performance between the 3 post-merger years and the 3 pre-merger years is negative but it is statistically insignificant. Similarly, the change in performance between the years 2 and 3, and the year -1 is also statistically insignificant.

The findings in this study support the hypothesis that friendly acquisitions outperform hostile ones. While firms that are engaged in hostile acquisitions experience a decline in operating performance, firms that are merged after an agreed deal can achieve performance similar to that which prevails in their industries.

6.3.3. The Industry Relatedness.

Industry relatedness between target and bidder is another factor that has been frequently cited as determining to the success or failure of a merger. Evidence in the literature suggests that unrelated acquisitions destroy value. Results in Table 9 Panel A and Panel B, confirm the existing evidence.

In the 5 pre-merger years, unadjusted firm median annual operating cash flow returns on assets range from 20.54% to 16.43% while in the 5 post-merger years it is between 13.07% and 15.49%. The industry adjusted cash flow return on assets for the entire sample and all the pre-merger years is positive (0.22%) and statistically insignificant, indicating that the combined target and bidder perform as well as their industry peers. This is also true for each one of the 5 pre-merger years. In the post merger period, however, the sample median annual industry adjusted operating cash flow return on assets for all the years, is -0.61% and statistically significant at a 10% significance level (p value 0.075). The decline in performance is more obvious in the first and the second year after the merger completion. In Year 1, the median annual industry adjusted performance for the 27 acquirers is -1.39% with only 37.04% of the observations being positive. Even worse, in the second year performance falls to -1.79% (which is statistically significant at a 5% significance level, p value 0.024), with 70.37% of the observations being negative.

TABLE 9

Median Annual Performance for the 27 acquisitions where the acquirers and acquirees belong to different Level 5 Industrial Sectors.

Panel A[18]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		% postitive	Number of observations
-5	18.30%	-2.69%		41.67%	12
-4	20.54%	2.51%		58.33%	12
-3	17.50%	-0.49%		48.15%	27
-2	16.43%	0.33%		59.26%	27
-1	17.87%	0.23%		51.85%	27
Median Annual Performance for years -5 to -1	17.59%	0.22%		52.38%	105
1	13.07%	-1.39%		37.04%	27
2	13.14%	-1.79%	**b**	29.63%	27
3	14.17%	-0.06%		48.15%	27
4	15.04%	0.39%		66.67%	12
5	15.49%	0.52%		58.33%	12
Median Annual Performance for years 1 to 5	14.12%	-0.61%	**c**	43.81%	105

Panel B[19]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	0.23%	
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	0.57%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 0.89%	**c**
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-0.47%	
Δ (IAOP) Year -1, Years 2, 3	-0.85%	**b**
Δ (IAOP) Years -1, -2, -3 , Years1, 2, 3	-1.98%	**b**
Δ SALES	16.55%	
Δ Operating Costs	16.92%	
Δ Employee costs per Sales	1.60%	**a**
Δ Number of employees per thousand of sales	-0.56%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[18] See footnote 1.
[19] See footnote 3.

This finding is indicative of the inefficiencies in operations during the first period after the merger arising from the possible difficulties of the acquirer to run and integrate a target with unrelated business operations. Performance improves in year 3, 4 and 5 but not substantially enough so as to reverse the negative median performance for the 5 year period.

Similar results are provided by the Change model and they are illustrated in Panel B. The median industry adjusted operating performance in the year immediately before the merger is positive and statistically insignificant which means that target and bidders, on average perform as their industries. The same is also the case for the 3 years before the merger. The median change in operating performance between the year before the merger and the second and third year after the merger is -0.85% and statistically significant at a 5% significance level (p value 0.049%). The median change in operating performance between the 3 pre-merger years and the 3 post-merger years is -1.98% and statistically significant at a 5% significance level (p value 0.034).

The median change in sales and operating costs between the 3 pre- and the 3 post-merger years are 16.55% and 16.92% respectively. Sales increased after the merger as it was expected after the expansion in operations due to acquisition. Operating costs increased at the same pace and not more as was the case in the entire sample of this study. This may indicate that the decline in performance is attributable to the increase of other costs than operating like costs arising from the need of monitoring the acquired unit's performance and costs associated with the integration process. The finding that operating performance declined sharply in the first and the second year of the merger and afterwards there is an improvement supports this view.

Table 10 illustrates the pre- and post-merger operating performance of the 52 acquisitions where bidder' and target's operations fall within the same Level 5 Industrial classification. The median annual industry adjusted operating cash flow returns on assets is approximately at industry standards in the 5 year pre-merger period; it is 0.16% and statistically insignificant which means that the combined target and bidder neither outperform nor underperform the industry peers. Operating performance remains around industry standards in the 5 year post-merger period.

TABLE 10

Median Annual Performance for the 52 acquisitions where the acquirer belong to the same Level 5 Industrial Sector with that of the acquiree in the year before the takeover.

Panel A[20]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median	Industry - Adjusted % postitive	Number of observations
-5	16.47%	-0.09%	48.00%	25
-4	17.65%	0.67%	52.00%	25
-3	15.71%	0.22%	51.92%	52
-2	14.11%	-0.91%	38.46%	52
-1	15.43%	0.16%	51.92%	52
Median Annual Performance for years -5 to -1	15.60%	-0.31%	48.06%	206
1	13.00%	-1.06%	44.23%	52
2	12.43%	-1.49%	38.46%	52
3	12.45%	-1.48%	38.46%	52
4	13.27%	-2.39%	36.00%	25
5	15.91%	1.42%	64.00%	25
Median Annual Performance for years 1 to 5	12.98%	-0.86%	42.72%	206

Panel B[21]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	0.16%
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	-0.54%
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 1.01%
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-1.14%
Δ **(IAOP)** Year -1, Years 2, 3	-0.81%
Δ **(IAOP)** Years -1, -2, -3 , Years1, 2, 3	0.31%
Δ **SALES**	13.78%
Δ **Operating Costs**	16.40%
Δ **Employee costs per Sales**	0.38%
Δ **Number of employees per thousand of sales**	-0.25% **a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.

[20] See footnote 1.
[21] See footnote 3.

The slight decline of -0.86% is statistically insignificant. The number of positive observations for the respective periods is about 48% (pre-merger) and about 43% (post-merger).

Related acquisitions, therefore, exhibit better performance in comparison to unrelated ones and in comparison to the average outcome for the entire sample. Average performance remains unchanged in the 5 year period following merger completion. Similar findings are provided by the Change model (Panel B). The median change in operating performance between the years 2 and 3 and the year -1 is negative but statistically insignificant. The median change between the 3 post- and the 3 pre-merger years is also negative but statistically insignificant.

Operating Costs increase by a higher rate than that of sales after the merger, a fact that may contribute to the slight and statistically insignificant performance decline in the post-merger period.

The examination of the three merger characteristics that are most commonly cited in the literature as possible determining factors of the success or failure of a merger indicated that acquisitions that are financed by cash perform worse than acquisitions that are financed by stock or by a combination of stock and cash. Moreover, hostile acquisitions experience a performance decline, in contrast to friendly ones which retain their pre-merger performance standards. Finally, unrelated acquisitions exhibit a performance decline in the 5 year post-merger period while related ones perform almost as well as their industry peers. In all the above cases, it is noteworthy that the highest decline is observed in the second year after the merger completion which is followed by a gradual improvement in years 3, 4 and 5.

An interesting finding of this study is that while the average outcome of the sample mergers is negative, friendly acquisitions and acquisitions that are financed by stock or stock and cash and related acquisitions, manage to maintain their pre-merger performance in the post-merger years. The exceptions to this are acquisitions that are financed by stock where the combined target and bidder underperform their industry peers and improve their performance to industry standards in the post merger period. In the next section the operating performance of acquisitions that share some of the above characteristics – i.e. they are friendly, they are financed by

stock and the target and the bidder belong to the same Level 5 industrial sector, is illustrated.

6.4. Operating Performance of Strategic Acquisitions.

Strategic acquisitions are defined those that are friendly, are financed by stock or a combination of stock and cash, and the bidder and the target belong to the same industry. In the sample, we identified 29 such acquisitions. In the previous paragraph the operating performance of friendly acquisitions was found to be higher than that of hostile ones, and approaching their industry's standards. Stock and stock and cash acquisitions found to outperform cash acquisitions which experience a sharp decline in post-merger performance. Finally, acquisitions in unrelated industries to that of the acquirer exhibit negative post-merger performance while related acquisitions maintain the pre-merger performance standards which are about at the level of the industry median.

The operating performance of the 29 combined targets and bidders that engaged to a friendly acquisition that was financed by a means of payment other than cash within the same Level 5 Industrial Sector, is illustrated in Table 11, Panel A.

The firm median annual operating cash flow returns on assets declines from 16.25% in the 5 pre-merger years to 14.65% in the 5 post-merger years. The median annual industry adjusted operating performance, however, seems to slightly improve after the merger. In the pre-merger 5 year period it is -0.33% and statistically insignificant, but in the post-merger period it increases to 0.49% (though statistically insignificant) with more than 51% of the observations being positive. Thus, there is some evidence that strategic acquisitions, on average, perform better than the average sample acquisition.

TABLE 11

Median Annual Performance for the 29 acquisitions where the method of payment was stock or a combination of stock and cash and the bidder and the target belonged to the same Level 5 Industrial Sector, and the bid was friendly.

Panel A[22]

Pre and Post-Merger Operating cash flow returns

		Industry - Adjusted		
Year Relative to Merger	Firm Median	Median	% postitive	Number of observations
-5	16.47%	-0.44%	41.18%	17
-4	17.91%	2.01%	58.82%	17
-3	15.78%	1.30%	55.17%	29
-2	13.13%	-0.99%	34.48%	29
-1	16.69%	1.13%	55.17%	29
Median Annual Performance for years -5 to -1	16.25%	-0.33%	48.76%	121
1	16.84%	0.73%	58.62%	29
2	15.26%	-0.44%	48.28%	29
3	13.68%	-0.74%	44.83%	29
4	13.27%	-2.77% **b**	41.18%	17
5	16.06%	2.74%	64.71%	17
Median Annual Performance for years 1 to 5	14.65%	0.49%	51.24%	121

Panel B[23]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	1.13%
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	-0.52%
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	0.72%
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	1.84%
Δ (IAOP) Year -1, Years 2, 3	0.87%
Δ (IAOP) Years -1, -2, -3 , Years 1, 2, 3	2.17%
Δ SALES	25.22%
Δ Operating Costs	28.75%
Δ Employee costs per Sales	0.20%
Δ Number of employees per thousand of sales	-0.25% **a**

1- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.

[22] See footnote 1.
[23] See footnote 3.

This is also confirmed by results produced by the Change model which are illustrated in Panel B. The median difference in operating performance between the 3 year post- and the 3 year pre-merger periods is 2.17% (which however is statistically insignificant). The median difference in operating performance between the years 2 and 3 and the year -1 is 0.85% (which is also statistically insignificant). Operating costs increase faster than sales in the 3 post-merger years relative to the 3-pre-merger years.

6.5. Operating Performance and Acquisition Premium.

Takeover premium is often associated with post-merger performance in the sense that the more synergy value a particular acquisition is expected to generate, the higher the maximum price an acquirer is justified in paying. On the other hand, a high acquisition price may deprive valuable resources from an acquirer that are necessary to finance other more profitable projects or it may lead to a disruption of ongoing projects; thus, an overpriced acquisition may adversely affect post-merger performance. In this study, the acquisition premium is defined as the excess value an acquirer pays over the intrinsic value of the target, i.e. over the price of its stock before any acquisition intensions are announced[24]. Because acquisition intensions – not necessarily by the ultimate acquirer - are often speculated by investors possibly many months before the acquisition, the intrinsic value of the target is taken at the beginning of the year -1.

In table 12 Panel A the operating performance of the 27 combined targets and bidders where the acquirer paid a premium from 62% over the intrinsic value of the target up to 6.5-fold of the intrinsic value of the target as at the beginning of the year -1 is illustrated. This classification took into account two parameters. First, a substantial premium to have been paid by an acquirer; for example, a 10% premium over the intrinsic value of a target, while it is a substantial premium when considering large acquisitions, it may not have any visible effects in post-merger performance. Second, while the intension was to examine the most expensive acquisitions, the sample should not be reduced below a level where a very small

[24] This definition is as at Eccles et.al. (1999).

number of observations make a statistical test unreliable. As far as the Wilcoxon test is concerned this number should not be less than 13. Thus the 27 most expensive acquisitions were selected for which there were at least 13 observations in years -4,-5, 4 and 5.

The results in Table 12 Panel A indicate that there is a decline in post-merger performance when the acquirer paid a large premium. The combined target and bidder median annual operating cash flow return on assets ranges from 12.12% to 16.01% in the 5 pre-merger years and it is 14.89% for the whole period. In the post-merger years it ranges from 12.46% to 14.49% and falls to 13.39% for the whole period. The decline in median annual industry adjusted operating cash flow return on assets is sharper. While it is positive (0.29% and statistically insignificant) in the five pre-merger years it falls to -1.17% in the post-merger period. This number is statistically significant at a 5% significance level (p-value 0.017). The number of positive observations for the entire sample falls from 52.34% in the pre-acquisition period to 39.25% in the post-acquisition period. Acquirers that paid a premium well above the intrinsic value of the target to target shareholders, perform below industry standards in the post-merger period.

The results in Panel B also indicate performance deterioration in the post-merger period. The median annual industry adjusted operating performance for the 3 pre-merger years is 0.99% and statistically insignificant which indicates that the combined target and bidder perform as well as their industry peers. In the three post-merger years, however, the median annual industry adjusted operating performance is -0.85% significant at a 10% significance level (p-value 0.097). The median change in performance between the 3 post- and the 3-pre merger years is -0.83% but statistically insignificant, while the median change between the year 2 and 3 and the year immediately prior to the acquisition is -3.70% and statistically significant at a 5% significance level (p-value 0.021). The median difference in sales for a 3-year window around the year of merger completion is 26.33% while the median change of operating costs in the same period is 28.75%.

TABLE 12

Median Annual Performance for the 27 cases of the sample where the acquirer paid a premium between 162% and 658.5% of the acquiree's market value as at the beginning of the year -1.

Panel A[25]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		Industry - Adjusted % postitive	Number of observations
-5	15.49%	0.29%		53.85%	13
-4	12.12%	-2.11%		38.46%	13
-3	14.89%	0.99%		55.56%	27
-2	13.87%	-0.47%		48.15%	27
-1	16.01%	0.57%		59.26%	27
Median Annual Performance for years -5 to -1	14.89%	0.29%		52.34%	107
1	13.07%	-0.61%		48.15%	27
2	12.46%	-2.73%		33.33%	27
3	13.39%	-1.41%		37.04%	27
4	13.53%	-2.77%		30.77%	13
5	14.49%	-0.62%		46.15%	13
Median Annual Performance for years 1 to 5	13.39%	-1.17%	**b**	39.25%	107

Panel B[26]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	0.57%	
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	0.99%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 0.85%	**c**
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-1.13%	
Δ (IAOP) Year -1, Years 2, 3	-3.70%	**b**
Δ (IAOP) Years -1, -2, -3 , Years1, 2, 3	-0.83%	
Δ SALES	26.33%	
Δ Operating Costs	28.75%	
Δ Employee costs per Sales	0.49%	
Δ Number of employees per thousand of sales	-0.31%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[25] See footnote 1.
[26] See footnote 3.

In Table 13 Panel A, the operating performance of the 27 acquisitions where the acquirer paid an amount that was less or equal to the intrinsic value of the target as at the beginning of the first pre-acquisition year is illustrated. The combined firm's unadjusted median annual operating performance fell from 17.35% in the entire pre-acquisition period to 13.28% in the entire post-acquisition period. The median annual industry adjusted operating performance, however, is statistically insignificant both in the pre- and post acquisition periods. This means that the average combined firm performance does not deviate substantially from industry standards before and after the acquisition. However, it is noteworthy that the number of positive observations falls from 48.57% in the entire pre-acquisition period to 43.81% in the post-acquisition period. The median industry adjusted performance for the entire post-acquisition period, though statistically insignificant, is negative (-0.95%). In other words, there is a slight decline in performance. Another finding is that the median annual operating cash flow returns on assets increases gradually from -2.18% in the first year after the merger to 2.04% in the fifth year[27].

The results from the Change model also confirm some decline in performance (Panel B). The median operating performance for years 1, 2, and 3 is -1.49% and statistically significant at a 5% significance level (p-value 0.049). The median change in industry adjusted operating performance between years 2 and 3 and the year -1 is statistically insignificant and -1.20%. The median change in industry adjusted operating performance between the 3 post- and the 3 pre-merger years is -0.90% and also statistically insignificant. The median change in sales for the same periods increases modestly relatively to the average increase in the entire sample (2.13%). Operating costs increase by 3.15%.

[27] Both the figures are statistically insignificant.

TABLE 13

Median Annual Performance for the 27 acquisitions where the acquirer paid an amount that ranges from 16% to 100% of the acquiree's market value as at the beginning of the year -1.

Panel A[28]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		Industry - Adjusted % postitive	Number of observations
-5	19.42%	1.79%		58.33%	12
-4	19.88%	3.00%	c	66.67%	12
-3	17.11%	-0.18%		48.15%	27
-2	17.10%	-0.29%		48.15%	27
-1	15.30%	-1.64%	b	37.04%	27
Median Annual Performance for years -5 to -1	17.35%	-0.29%		48.57%	105
1	12.68%	-2.18%		33.33%	27
2	12.37%	-1.79%	b	25.93%	27
3	13.98%	-0.30%		48.15%	27
4	15.42%	0.39%		66.67%	12
5	15.47%	2.04%		75.00%	12
Median Annual Performance for years 1 to 5	13.28%	-0.95%		43.81%	105

Panel B[29]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	-1.64%	**b**
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	-0.56%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	-1.49%	**b**
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-1.20%	
Δ (IAOP) Year -1, Years 2, 3	1.07%	
Δ (IAOP) Years -1, -2, -3 , Years1, 2, 3	-0.90%	
Δ SALES	2.13%	
Δ Operating Costs	3.15%	
Δ Employee costs per Sales	1.47%	**a**
Δ Number of employees per thousand of sales	-0.29%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[28] See footnote 1.
[29] See footnote 3.

Acquisitions in discount seem to perform better than acquisitions in premium. The average performance for the 5 post-merger periods while negative is very close to industry standards. However there is some evidence of a decline in performance which is modest in comparison to that of the acquisitions in premium. Presumably, acquisitions in discount refer to targets that face efficiency and operations problems. There is not much competition among bidders for acquiring such targets with ambiguous futures and a declining competitive advantage. Thus, a bidder may express an interest for a purchase but at an advantageous price. Increasing efficiency of such targets may prove a difficult task for the acquirer, and definitely this may require time. This is consistent with the finding that adjusted performance is -2.18% in the first post-acquisition year with 33% of the observations being positive, becoming -1.79% and statistically significant in the second year with only 25.93% of the observations being positive and increases afterwards. In the third year the decline is only -0.30% with 48.15% of the observations being positive, and it becomes 0.39% and 2.04% in the fourth and fifth post-acquisition years respectively.

6.6. Operating Performance and Relative Size.

It is well established in M&As literature that the acquisition size may be an important parameter affecting post-merger performance. Acquisition size is determined by the relative size of the acquirer and the target. In this study the sample of the 79 acquisitions was divided into two sub-samples that consisted of 38 acquisitions each. The first included the 38 largest acquisitions in the sample; the relative bidder's size ranged from 7% to 317% of the size of the target in the first sub-sample. The second sub-sample included the 38 smallest acquisitions of the sample where the relative bidder's size ranged from 400% to 37516% of the size of the target. Size was based on market values of the two firms at the beginning of the year -1. The results of the operating performance of the largest and smallest acquisitions in the sample are illustrated in Table 14 and Table 15, respectively.

As Table 14 Panel A shows, median annual industry adjusted operating performance improves slightly after merger. In the entire five year pre-merger period the combined target and bidder performance is very close to industry standards

TABLE 14

Median Annual Performance for the 38 largest acquisitions of the sample. Relative bidders' size ranges from 7% to 317% of the size of target; size is based on market value of equity of the two firms at the beginning of year -1.

Panel A[30]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median	Industry - Adjusted % postitive	Number of observations
-5	19.25%	-0.44%	47.06%	17
-4	19.60%	3.12%	64.71%	17
-3	15.76%	-0.06%	50.00%	38
-2	15.73%	-0.28%	50.00%	38
-1	16.78%	0.85%	55.26%	38
Median Annual Performance for years -5 to -1	16.44%	-0.09%	49.52%	148
1	16.15%	1.64%	57.89%	38
2	13.16%	-1.36%	39.47%	38
3	14.59%	0.83%	52.63%	38
4	14.44%	0.15%	52.94%	17
5	15.91%	2.38%	64.71%	17
Median Annual Performance for years 1 to 5	14.58%	0.27%	52.03%	148

Panel B[31]

CHANGE MODEL

IAOP-(Industry Adjusted O. Performance): Median of Year -1	0.85%
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	0.22%
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 0.10%
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	1.13%
Δ (IAOP) Year -1, Years 2, 3	0.66%
Δ (IAOP) Years -1, -2, -3 , Years1, 2, 3	0.30%
Δ SALES	14.00%
Δ Operating Costs	13.47%
Δ Employee costs per Sales	0.87% **c**
Δ Number of employees per thousand of sales	-0.34% **a**

b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[30] See footnote 1.
[31] See footnote 3.

(-0.09% and statistically insignificant). In the post-merger period it becomes a positive of 0.27% (though statistically insignificant). The aggregate positive observations in the entire pre-merger period is 49.52% while in the post-merger years the respective figure slightly improves to 52.03%. Industry adjusted operating performance in each of the post-merger years is positive, with the positive observations to exceed 52%. The only exception is year 2 where industry adjusted operating performance is a negative (but statistically insignificant) of -1.36% and the positive observations 39.47%.

Panel B shows results from the Change model. The median change in industry adjusted operating performance between the 3 post-merger years and the 3 pre-merger years is 0.30% and statistically insignificant. The median change between years 2 and 3 and the year -1 is 0.66% and also statistically insignificant. Median change in sales between the 3 post- and the three pre- acquisition years is 14% while the median change in operating costs is 13.47%.

Large acquisitions in the sample outperform the average acquisition of the entire sample. There is some evidence of performance increases in the post-merger years, though this is not statistically significant.

Small acquisitions on the other hand, exhibit a dramatic decline in performance in the post-merger years. Table 15 shows performance changes for the 5 year pre-merger and the 5 year post-merger periods of the 38 smallest acquisitions in the sample.

As it is reported in Panel A, the combined firm median annual unadjusted operating cash flow returns on assets fall from 15.96% in the 5 pre-merger years to 12.74% in the 5 post-merger years. More importantly, the median industry adjusted operating performance while -0.15% and statistically insignificant in the pre-merger period – i.e. performance which is indistinguishable from industry standards – it becomes -1.30% and statistically significant at a 1% significance level (p-value 0.001) in the post-merger years. Positive observations for the same periods are 48.03% and 36.18% respectively. In the first post-merger year the median annual industry adjusted operating cash flow return on assets is -2.70%, significant at a 5% significance level (p-value 0.013) with only 26.32% of the observations being positive. In the second post-merger year it is -2.80%, statistically significant at a 1%

significance level (p-value 0.09) with 31.58% of values being positive. In the third year performance improves to -1.48%. However this figure is statistically significant at a 5% significance level (p-value 0.032) and only 34.21% are positive. In year four the positive observations increase to 42.11% of cases and the performance is still negative (-0.33%) but statistically insignificant, and finally, in year five median industry adjusted performance becomes positive (but statistically insignificant).

Panel B demonstrates the median change in annual industry adjusted operating performance. This is -1.92% between the years 2 and 3 and the year -1. This figure is statistically significant at a 5% significance level. The median change in operating cash flow return on assets between the 3 post- and the 3 pre-merger years is -2.03% and statistically significant at a 10% significance level. In other words, there is a sharp decline in performance of the combined firm in the post-merger years when the acquisition is small.

The results concerning post-merger performance agree with those derived by Healy's model. The median annual industry adjusted operating cash flow return on assets for years 2 and 3 is -2.14% (and statistically significant at a 1% significance level – p-value 0.01) while it is -1.67% and statistically significant at a 1% significance level (p-value 0.004) for the years 1, 2, and 3. The median change in sales between the 3 post and the 3 pre-merger years is 14.92% and the median change in operating costs between the same periods is 16.85%.

TABLE 15

Median Annual Performance for the 38 smallest acquisitions of the sample. Relative bidders' size ranges from 400% to 37516% of the size of target; size is based on market value of equity of the two firms at the beginning of year -1.

Panel A[32]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		% postitive	Number of observations
-5	15.26%	-0.09%		47.37%	19
-4	17.21%	-0.84%		47.37%	19
-3	16.71%	0.19%		52.63%	38
-2	15.97%	-1.11%		42.11%	38
-1	15.43%	0.01%		50.00%	38
Median Annual Performance for years -5 to -1	15.96%	-0.15%		48.03%	152
1	11.53%	-2.70%	**b**	26.32%	38
2	12.51%	-2.80%	**a**	31.58%	38
3	12.30%	-1.48%	**b**	34.21%	38
4	14.10%	-0.33%		42.11%	19
5	16.06%	0.90%		63.16%	19
Median Annual Performance for years 1 to 5	12.74%	-1.30%	**a**	36.18%	152

Panel B[33]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	0.01%	
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	0.10%	
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	-1.67%	**a**
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-2.14%	**a**
Δ **(IAOP)** Year -1, Years 2, 3	-1.92%	**b**
Δ **(IAOP)** Years -1, -2, -3 , Years1, 2, 3	-2.03%	**c**
Δ SALES	14.92%	
Δ Operating Costs	16.85%	
Δ Employee costs per Sales	0.71%	
Δ Number of employees per thousand of sales	-0.22%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[32] See footnote 1.
[33] See footnote 3.

Large acquisitions, therefore, outperform small ones. The phenomenon is amplified when the bidder is a relatively large firm. Taking the 19 largest acquirers in the sub-sample of the 38 largest acquisitions the post-merger operating performance increases significantly. Results are illustrated in Table 16.

As Panel A of Table 16 illustrates, the combined targets and bidders outperform their industry peers in the 5 years before the merger. The median of the difference between firms' operating cash flow return on assets and the weighted median performances of their respective industries is positive (0.71%) and statistically significant at a 5% significance level (p-value 0.036) in the entire 5 year pre-merger period. Median annual industry adjusted operating performance increases to a statistically significant 0.86% in the five year post-merger period (which is statistically significant at a 5% significance level (p-value 0.021). The positive observations increase from about 56% in the entire 5 year pre-merger period to about 60% in the post-merger period.

The median difference in operating performance between the 3-year post- and the 3-year pre-merger periods is positive (0.27%) but statistically insignificant (Panel B). The same is the case for the median difference in performance between years 2and 3 and the year -1 (0.87%, and statistically insignificant).

TABLE 16

Median Annual Performance for the acquisitions completed by the 19 largest acquirers, within the sub-sample of the 38 larger acquisitions of the sample.

Panel A[34]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Industry - Adjusted Median		% postitive	Number of observations
-5	18.72%	-1.80%		30.00%	10
-4	21.07%	2.89%	**c**	60.00%	10
-3	17.50%	2.21%		57.89%	19
-2	17.15%	0.33%		57.89%	19
-1	16.87%	1.13%		63.16%	19
Median Annual Performance for years -5 to -1	17.50%	0.71%	**b**	55.84%	77
1	16.53%	1.64%	**c**	63.16%	19
2	13.19%	-0.44%		47.37%	19
3	16.17%	2.18%	**b**	68.42%	19
4	14.35%	-1.60%		50.00%	10
5	17.26%	2.52%		70.00%	10
Median Annual Performance for years 1 to 5	15.65%	0.86%	**b**	59.74%	77

Panel B[35]

CHANGE MODEL

IAOP-(Industry Adjusted Op. Performance): Median of Year -1	1.13%
IAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	1.22%
IAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	0.86% **c**
IAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	1.68% **c**
Δ (IAOP) Year -1, Years 2, 3	0.87%
Δ (IAOP) Years -1, -2, -3 , Years1, 2, 3	0.27%
Δ SALES	3.89%
Δ Operating Costs	3.65%
Δ Employee costs per Sales	0.89%
Δ Number of employees per thousand of sales	-0.31% **a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[34] See footnote 1.
[35] See footnote 3.

6.7. Abnormal Industry Adjusted Cash Flow Returns.

Following Healy et. al. (1992), we measure the abnormal industry adjusted cash flow returns by running the regression (4.9), as described in Chapter 4. The intercept (a) in the regression captures the percentage change in industry adjusted operating cash flow return on assets which is attributable to merger. The coefficient (b) represents the fraction of the pre-merger performance which persists in the post-merger years.

To estimate the relationship between post-merger performance and the transaction characteristics we include in equation (4.9) the necessary dummy variables. A dummy variable which is one when an acquisition was financed by stock and zero otherwise (*STOCK*), a dummy variable which is '1' when the medium of financing was a mix of stock and cash and '0' otherwise (*MIX*), a dummy variable which becomes '1' if the acquisition was friendly and '0' if it was hostile (*FRIENDLY*), and a dummy which denotes whether the acquirer and the target operated in the same Level 5 industry with the value of '1' (*RLTD*). Furthermore, 3 other dummy variables were used. One for denoting whether the acquisition occurred in premium (*RELPREM*) which takes the value of '1' in this case and '0' otherwise, and one which takes the value of '1' if the acquisition is large (*LARGEacqtn*) and the value of '0' in all other cases. Results from the regressions are illustrated in Table 17[36].

The first column of Table 17 illustrates regression (1) which shows that the coefficient (b) is 0.056 and statistically insignificant, indicating that industry adjusted cash flow returns of the pre-merger period do not persist in the post merger period. The intercept coefficient (a) is -0.017 and statistically significant denoting that there is a 1.7% decline in annual operating performance after controlling for pre-merger performance. These results do not agree with those derived by Healy et.al. (1992) who found pre-merger performance persistence in the post-merger years and a 2.8% increase in annual performance after the merger.

[36] The regressions were initially run in SPSS 11.0 statistical package. While no multicollinerarity was detected in any of them, an unknown form of heteroscedasticity was detected. Table 17 illustrates the results produced using Limdep 8.0 statistical package which implements White correction for heteroscedasticity.

In Regression (2) the coefficient (b) is also statistically insignificant indicating that pre-merger performance has no significant effect on post merger performance. The coefficients of the dummy variables (*STOCK*) and (*MIX*) are both positive but statistically insignificant. The intercept coefficient (a) is -0.028 indicating that acquisitions that are financed by cash experience a significant decline in annual operating performance of 2.8% on average. This finding is not consistent with evidence provided by Healy et. al. and by Powell and Stark (2005) who report that the medium of payment seem to have no effect in post-merger performance.

TABLE 17 (heteroscedasticity corrected (White))

Healy's et.al. (1992) Regression Model. OLS regressions of post-takeover industry adjusted operating performance on combined target and bidder industry adjusted pre-takeover operating performance

EQUATION	1	2	3	4	5	6	7	8	9	10	11	12	13
INDEPENTEND VARIABLES	IAOP post	IAOP post	IAOP post	IAOP post	IAOP post	IAOP post	IAOP post	IAOP post	IAOP post	IAOP post	IAOP post	IAOP post	IAOP post
CONSTANT (a)	-0.017 **	-0.028 *	-0.012 *	-0.035 **	-0.030 ***	-0.025 ***	-0.028 ***	-0.027 ***	-0.048 **	-0.013	-0.028 ***	-0.026 ***	-0.021 ***
t-stat	-2.493	-1.899	-1.792	-2.302	-2.738	-2.751	-3.162	-3.071	-2.077	-1.644	-3.113	-3.094	-3.023
IAOPpre	0.056	0.056	0.053	0.095	0.099	0.072	0.084	-0.004	0.101	0.060	0.037	0.077	0.048
t-stat	0.784	0.768	0.728	1.173	1.271	1.015	1.145	-0.053	1.228	0.818	0.455	1.045	0.665
STOCK		0.009							0.019				
t-stat		0.444							0.898				
MIX		0.017							0.021				
t-stat		0.985							1.281				
LGxRLTD												0.029 **	
t-stat												2.300	
FRIENDLY			-0.006						-0.006				
t-stat			-0.582						-0.484				
RLTD				0.027					0.030*				
t-stat				1.657					1.766				
RLTDxnCASH					0.027**								
t-stat					2.009								
RLTDxMIX						0.023*							
t-stat						1.871							
FRxRLTDxnCASH							0.030**	0.031**					
t-stat							2.357	2.528					
RELPREM 1										-0.010			
t-stat										-0.679			
LG											0.022*		

t-stat												1.660	
FR-REL-Ncash*IAOPpre								**0.368***					
t-stat								1.911					
WCMARA													**0.064***
t-stat													1.827
R SQ	**0.004**	**0.016**	**0.006**	**0.051**	**0.054**	**0.040**	**0.064**	**0.094**	**0.072**	**0.010**	**0.040**	**0.058**	**0.036**
ADJ R sq	**-0.009**	**-0.023**	**-0.020**	**0.026**	**0.029**	**0.014**	**0.039**	**0.057**	**0.008**	**-0.016**	**0.014**	**0.033**	**0.010**
F stat	**0.300**	**0.410**	**0.220**	**2.040**	**2.170**	**1.570**	**2.590**	**2.580**	**1.130**	**0.380**	**1.570**	**2.360**	**1.42**
Nr of Observations	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**

IAOPpost denotes the median annual industry adjusted cash flow returns for each combined firm in the five years after the year of the merger completion.
IAOPpre denotes the median annual industry adjusted cash flow returns for each combined firm in the five years prior to the year of the merger completion.
*** denotes significance at a 1% significance level using a two-tail test
** denotes significance at a 5% significance level using a two-tail test
* denotes significance at a 10% significance level using a two-tail test
Variable *STOCK*: takes the value of 1 if the mode of payment is stock and 0 otherwise; variable *MIX*: takes the value of 1 if the method of payment is a combination of stock and cash and 0 otherwise; variable *LGXRLTD*: is the product of the dummy variable LG, which takes the value of 1 if the acquisition is large and 0 otherwise, and the dummy variable *RLTD* which takes the value of 1 if the acquiree and the acquirer operate in the same business line and 0 otherwise; variable *FRIENDLY*: it takes the value of 1 if the acquisition is friendly and 0 otherwise; variable *RLTDXnCash*: is the product of the dummy variable *RLTD* and the dummy variable nCash which takes the value of 1 if the transaction did not involve cash and 0 otherwise; variable RLTDXMIX: is the product of the variables RLTDand MIX; variable FRXRLTDXnCASH is the product of the variables *FRIENDLY, RLTD*, and *nCASH* and it takes the value of 1 If the acquisition is a Strategic one and 0 otherwise; variable *RELPREM*: takes the value of 1 if the acquiree was purchased at a premium and 0 otherwise (relative premium is defined as the value of the acquisition divided by the market value of equity of the acquiree as at the beginning of the year -1); variable *FRXRLTDXnCASHXIAOPpre*: is the product of the variables *FRIENDLY, RLTD, nCASH, IAOPpre*; variable *WCMARA*: is the weigthed average of the acquirer and the acquiree asset returns in the period of the event announcement.

Regression (3) describes the effect of target's management attitude. Whether the acquisition is friendly (dummy variable *FRIENDLY*) or not seems that it is irrelevant to the post-merger performance after controlling for the effects of pre-merger performance (which is statistically insignificant). However, the intercept coefficient is -0.012 and statistically significant denoting a decline in annual operating performance of 1.2% for hostile acquisitions.

In regression (4) the coefficient of the dummy variable (*RLTD*) is positive but statistically insignificant, indicating that the sample acquirers and targets which operate in the same Level 5 industry exhibit a post-merger performance increase. This is 2.7% increase in annual industry adjusted cash flow returns after pre-merger performance effect (which is also statistically insignificant) is controlled for. The intercept coefficient (a) captures the effect of performance change of unrelated acquisitions and it is a negative of -3.5% and statistically significant. These findings are different than those provided by Healy et.al. and Powell and Stark who report that industry relatedness does not have any significant effect on post-merger performance.

Regression (5) describes the effect on post merger performance when the acquisition was financed by a means of payment other than cash and the acquirer and the target belonged to the same Level 5 Industrial Sector. This effect is captured by the coefficient of the dummy variable (*nCash x Related*) which is the product of the dummy variable (*nCash*) that is '1' when the means of payment is not cash and '0' otherwise times the dummy variable (*RLTD*). This coefficient is 0.027 and statistically significant indicating an improvement in annual operation performance of 2.7% in the post-merger period after controlling for the (insignificant) effect of pre-merger performance. The intercept coefficient (a) captures the performance change due to merger of all the other types of acquisitions. This is -0.03 and highly significant.

The effect on post-merger performance when the method of payment was a combination of stock and cash (dummy *MIX*) and the target and the acquirer belonged to the same Level 5 Industrial Sector (dummy *RLTD*) after controlling for pre-merger performance is described in regression (6). This is captured by the coefficient of the dummy variable (*RLTD X MIX*) which is the product of the dummy

variables (*RLTD*) and (*MIX*). This coefficient is 0.023 and statistically significant, indicating that related acquisitions that are financed by a combination of stock and cash perform better than the rest. The intercept coefficient (a) indicates the decline in performance of the rest acquisitions which is 2.5% annually (and statistically significant).

In regression (7) the dummy variable (*FR X RLTD X nCASH*) is the product of the dummy variables (*FRIENDLY*), (*RLTD*) and (*nCASH*) and describes the sub-sample of the *STRATEGIC* acquisitions. Its coefficient indicates that strategic acquisitions perform better than the average combined company of the sample and the improvement in median annual performance is 3% (after controlling for the effects of pre-merger performance on the post-merger performance) and statistically significant. The intercept coefficient (a) is -0.028 and statistically significant indicating a deterioration of 2.8% in annual performance for the acquisitions that are not strategic. Regression (8) is derived from (7) after a dummy variable was added. This dummy variable (FR X RTD X nCASH X IAOPpre) is the product of the three respective dummy variables and its coefficient captures any amplification effect the pre-merger performance may have on the performance of strategic acquisitions Indeed, the coefficient is statistically significant which implies that much of the variation of the post-merger performance of Strategic acquisitions is explained by pre-merger performance. This implies that the above average performance of Strategic acquisitions in the post-merger years is attributable to pre-merger performance. This in turn implies that firms that are engaged in Strategic acquisitions enjoy a competitive advantage in their industries' which persists in the post-merger years .

In regression (9), the coefficient of the dummy variable (*RLTD*) is positive (0.03) and statistically significant indicating that related acquisitions perform better than unrelated ones, after controlling for the effects of the method of payment (the intercept coefficient is -0.048 and statistically significant). It is also noteworthy, that although the coefficients of the dummy variables (*MIX*) and (*STOCK*) are statistically insignificant, they are both positive indicating that our sample companies experience performance improvements when the acquisition is financed by stock or a combination of stock and cash.

In regression (10) the coefficient of the variable (*RELPREMIUM*) is negative but statistically insignificant indicating that premium has not a substantial impact on post-merger performance after controlling for the effect of pre-merger performance. Regression (11) expresses the relationship between whether an acquisition is large and the post-merger performance. Large acquisitions exhibit an improvement in median annual operating performance of 2.2% (the coefficient of the dummy variable (*LGacqn*) is 0.022 and statistically significant) while the intercept coefficient indicates that all other acquisitions experience a performance decline of -2.8% (a = 0.028 and statistically significant). The pre-merger performance does not have a significant effect on post-merger performance. In regression (12) the coefficient of the dummy variable (*LGxRLTD*) which is the product of the dummy variables (*LGacqn*) and (*RLTD*) is positive (0.029) and statistically significant, indicating that large acquisitions between firms that operate within the same Level 5 Industrial Sector exhibit an increase in annual operating performance which is 2.9%.

Regression (13) in Table 17 examines the relation between median annual industry adjusted operating cash flow returns on assets and the combined cumulative market-adjusted returns of total assets in the announcement period. This tests the ability of the stock market to forecast post-takeover changes in operating performance. The relation is positive and statistically insignificant. The implications of regression (13) are discussed in Chapter 9.

Table 17a illustrates regression equations with dummy and interaction variables together so as to include both linear and non-linear terms. All regressions have been tested for multicollineartity using condition index and eigenvalues, tolerance, and variance inflation factor. No multicollinearity was detected. As it can be seen most of coefficints were statistically insignificant.

TABLE 17a (heteroscedasticity corrected (White))

Healy's et.al. (1992) Regression Model. OLS regressions of post-takeover industry adjusted operating performance on combined target and bidder industry adjusted pre-takeover operating performance

EQUATION	1	2	3	4	5
INDEPENTEND VARIABLES	**IAOP post**	**IAOP post**	**IAOP post**	**IAOP post**	**IAOP post**
CONSTANT (a)	**-0.045****	**-0.0642**	**-0.038**	**-0.017**	**-0.047****
t-stat	-2.267	-1.135	-1.678	-0.512	-2.076
IAOPpre	**0.074**	**0.105**	**0.091**	**0.085**	**0.025**
t-stat	0.776	1.30	1.104	1.035	0.317
MIX			**0.006**		
t-stat			0.236		
LG	**0.021**				
t-stat	0.695				
nCASH		**0.033**		**0.000**	**0.020**
t-stat		0.566		0.009	1.296
LGxRLTD	**-0.000**				
t-stat	-0.018				
FRIENDLY				**-0.022**	**-0.005**
t-stat				-1.352	-0.461
RLTD	**0.026**	**0.044**	**0.024**	**0.007**	**0.029***
t-stat	1.246	0.767	0.974	0.326	1.776
RLTDxnCASH		**-0.016**			
t-stat		-0.276			
RLTDxMIX			**0.005**		
t-stat			0.184		
FRxRLTDxnCASH				**0.033**	
t-stat				1.354	
FR-REL-Ncash*IAOPpre					**0.319**
t-stat					1.681
R SQ	**0.0821**	**0.071**	**0.059**	**0.091**	**0.093**
ADJ R sq	**0.0325**	**0.059**	**0.009**	**0.029**	**0.031**
F stat	**1.66**	**1.43**	**1.18**	**1.47**	**1.51**
Nr of Observations	**79**	**79**	**79**	**79**	**79**

IAOPpost denotes the median annual industry adjusted cash flow returns for each combined firm in the five years after the year of the merger completion.
IAOPpre denotes the median annual industry adjusted cash flow returns for each combined firm in the five years prior to the year of the merger completion.
*** denotes significance at a 1% significance level using a two-tail test
** denotes significance at a 5% significance level using a two-tail test
* denotes significance at a 10% significance level using a two-tail test
For the definition of the above dummy variables, see Table 17, Chapter 6.

6.8. The Change Model.

As discussed in Chapter 4, restricting (b) to equal '1' in regression (4.9), the benchmark for measuring post-merger performance becomes the pre-merger performance. Results that derived from this model – i.e. the Change Model – are shown in Table 18.

In Table 18 the variables that denote the changes in median industry adjusted cash flow returns between different time periods around merger completion are IAOPch5, IAOPch3, IAOPch2 and IAOPch23. The first refers to a time period that includes the five post- and the five pre-merger years. That is, the second refers to a time period that includes the 3 post- and the three pre-merger years, the third refers to a time period that includes the 2 post- and the two pre-merger years, and IAOPch23 denotes the change in median industry adjusted operating performance between the years 2 and 3 and the year -1[37]. Dummy variables are as in Table 17.

Results from regression (1) indicate that cash acquisitions are followed by a statistically significant decline of -3.6% in annual performance. Acquisitions that were financed by stock or by a combination of stock and cash do not experience a significant change in performance (their coefficients although negative they are statistically insignificant). When regressing IAOPch5 against the dummy variable (*RELATED*) the results indicate that related acquisitions are followed by a 5.2% per annum improvement in performance (Regression 2). The intercept coefficient (a) denotes that unrelated acquisitions experience a 5.3% decline in annual performance[38]. In regression (3), IAOPch23 is regressed against the dummy (*RELPREM*). Results indicate a deterioration in annual performance of -5.9% for the sample acquisitions where the acquirer paid a high premium (as it was defined in Chapter 4). The intercept coefficient is also statistically insignificant indicating that all other acquisitions were not followed by a change in performance[39]. In regression (4) the dummy variable (*LARGEacqn*) is positive but statistically insignificant

[37] In all the cases the year of merger completion is excluded from the time periods in examination.
[38] Results do not change substantially when regressing IAOPch3, IAOPch2, and IAOPch23 against the variable (*RELATED*).
[39] Results when cash flow differences are represented by the variables IAOPch3, IAOPch5 and IAOPch2 are also statistically weak.

indicating that large acquisitions do not explain much of the variation of the change in post-merger performance. However, the intercept coefficient is negative and statistically significant meaning that all other acquisitions exhibit a performance decline. Regression (5) indicates that large acquisitions between firms operating in the same Level 5 Industrial Sector exhibit a statistically significant increase of 4.1% in operating performance in the post-takeover years. In regression (6), the dummy variable (*RLTD X nCASH*) is the product of the dummy variables (*RLTD*) and (*nCASH*) and takes the value of '1' when an acquisition is financed by a means of payment other than cash and the target and the bidder belong to the same Level 5 Industrial Sector. The results from this regression indicate that such acquisitions are followed by a 5.1% improvement in annual performance. In regression (7) the dummy (*RLTD X MIX*) takes the value of '1' when an acquisition is financed by a combination of stock and cash and the target and the bidder belong to the same Level 5 Industrial Sector. Such acquisitions exhibit in the post-acquisition period an improvement in annual performance of 3.5%.

The dummy (*FR X RLTD X nCASH*) in regressions (8), (9) and (10) denotes the Strategic acquisitions, i.e. it takes the value of 1 if an acquisition is strategic. Strategic acquisitions are followed by a 5% improvement in annual performance when the variable IAOPch3 is regressed against (*FR X RLTD X nCASH*), a 6% improvement in annual performance when cash flow differences are denoted by the variable IAOPch2, and a 4.5% improvement when IAOPch5 is regressed against (*FR X RLTD X nCASH*).

Regression (11) examines the effects of acquisitions that were financed by a means of payment other than cash on cash flow differences between the three post- and the three pre-merger years after controlling for the effect of friendly and related acquisitions. Coefficient of the variables (*nCASH*) and (*FRIENDLY*) are statistically insignificant indicating a negligible effect. However, they are positive as expected. The coefficient of the dummy (*RLTD*) is 0.061 and statistically significant indicating that related acquisitions are followed by a 6.1% improvement in annual performance after controlling for the effects of friendly and non-cash acquisitions. Regression (12) examines the effects of the same variables on differences in cash flows which refer to 5 year post- and pre-merger periods (IAOPch5). When the dummy variable (*FR X*

RLTD X nCASH) is added (regression 13) results are similar. However, all the coefficients are statistically insignificant (see Table 18).

Regressing the differences in cash flows between the years 2 and 3 and the year -1 (*IAOPch23*) against the dummy (*STOCK*) after controlling for the effects of (*FRIENDLY*) and (*UNRELATED*) (regression (14)), the results indicate a 7.3% per annum improvement in performance for stock acquisitions and 6.9% per annum decline in performance for unrelated acquisitions. The coefficient of the dummy (*FRIENDLY*) is statistically insignificant. Regression (15) provides similar results to those derived by regression (14).

Cash flow differences between acquisitions occurred in the period 1990-1993 and in the period 1994-1996 are examined by regressing the change in cash flows (*IAOPch23*) on the dummies (*ACQTION_90_93*) and (*ACQTIONS_94_96*), (regression (16)). The first takes the value of '1' if an acquisition occurred in the period from 1/1/1990 until 31/12/1993 and the second takes the value of '1' if an acquisition occurred in the period from 1/1/1994 until 31/12/1996. Results indicate that acquisitions in the period 1994-1996 are followed by a 6.9% decline in annual performance. On the contrary, acquisitions occurred in the period 1990-1993 do not experience any decline in performance.

Regression (17) confirms evidence from regression (16). Regressing IAOPch5 on the dummy the results indicate a 3.4% increase in annual performance for acquisitions occurred in the period 1990-1993. The intercept coefficient (a) is -0.038 indicating a 3.8% decline in annual performance for the remaining acquisitions in the sample (i.e. for acquisitions occurred in the period from 1994-1996). Similarly, regressing IAOPch23 on the dummy (*ACQTION_90_93*) there is a 6.8% increase in annual performance for acquisitions completed in the period 1990-1993 (regression (18)). The intercept coefficient indicated a 6.9% decline in annual performance for acquisitions occurred in the period 1994-1996.

Regression (19) examines the relation between the combined cumulative market-adjusted returns of total assets in the announcement period and the median change in industry adjusted cash flow returns on total assets. The relation is positive but statistically significant. The implications of regression (19) are discussed in Chapter 9.

TABLE 18 (heteroscedasticity corrected (White))

Ghosh's (2001) Change Model. OLS regressions of the change in median annual industry adjusted operating performance of the combined firm between post- and pre- merger periods on dummy variables that describe certain merger characteristics.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
INDEP VARIABLES	**IAOP ch3**	**IAOP ch5**	**IAOP ch23**	**IAOP ch5**	**IAOP ch5**	**IAOP ch5**	**IAOP ch5**	**IAOP ch3**	**IAOP ch2**	**IAOP ch5**	**IAOP ch3**	**IAOP ch5**	**IAOP ch5**	**IAOP ch23**	**IAOP ch2**	**IAOP ch23**	**IAOP ch5**	**IAOP ch23**	**WCMA RA**
CONSTANT		**-0.053 ****	**-0.010**	**-0.023 *****	**-0.033 ****	**-0.044 *****	**-0.031 ****	**-0.038 *****	**-0.050 *****	**-0.036 *****	**-0.091 ****	**-0.088 ****	**-0.086**	**-0.025**	**-0.016**		**-0.038 ****	**-0.069 ****	**0.083 *****
t-stat		-2.470	-0.694	-1.928	-2.502	-2.751	-2.322	-2.637	-2.640	-2.675	-2.278	-2.322	-1.343	-0.977	-1.423		-2.320	-2.304	4.381
STOCK	**0.000**													**0.073 ****	**0.050 ***				
t-stat	-0.024													2.282	1.737				
MIX	**-0.021**																		
t-stat	-1.352																		
CASH	**-0.036 *****																		
t-stat	-1.742																		
nCASH											**0.034**	**0.033**	**0.032**						
t-stat											1.487	1.535	0.947						
FRIENDLY											**0.007**	**0.007**	**0.006**	**-0.002**					
t-stat											**0.279**	**0.299**	**0.157**	**-0.062**					
RLTD		**0.052 ****									**0.061 ****	**0.056 ****	**0.055**						
t-stat		2.252									2.462	2.487	1.446						
RLTDxnCASH						**0.051 *****													
t-stat						2.826													
RLTDxMIX							**0.035 ****												
t-stat							2.083												
UNRELATED														**-0.069 ***	**-0.069 ****				
t-stat														-1.705	-2.000				
FRxRLTDxnCASH								**0.050 *****	**0.060 ****	**0.045 *****			**0.002**						

t-stat								2.685	2.579	2.649			0.060						
REL PREM 1			**-0.059**																
t-stat			**-1.628**																
LGEacqn 1				**0.008**															
t-stat				0.430															
LGxRLTD					**0.041 ****														
t-stat					2.535														
ACQTIONS_190-93																**-0.001**	**0.034 ***	**0.068 ****	
t-stat																-0.056	1.763	2.112	
ACQTIONS_194-96																**-0.069 ****			
t-stat																-2.304			
IAOP ch5																			**0.170**
t-stat																			0.728
R SQ	**0.018**	**0.083**	**0.043**	**0.002**	**0.054**	**0.091**	**0.039**	**0.071**	**0.062**	**0.067**	**0.106**	**0.108**	**0.109**	**0.095**	**0.096**	**0.062**	**0.040**	**0.062**	**0.008**
ADJ R sq	**-0.008**	**0.071**	**0.031**	**-0.011**	**0.042**	**0.079**	**0.027**	**0.058**	**0.050**	**0.055**	**0.070**	**0.073**	**0.061**	**0.059**	**0.072**	**0.049**	**0.028**	**0.049**	**-0.004**
F stat	**0.700**	**6.950**	**3.490**	**0.180**	**4.420**	**7.680**	**3.130**	**5.840**	**5.090**	**5.520**	**2.950**	**3.050**	**2.260**	**2.630**	**4.040**	**5.050**	**3.240**	**5.050**	**0.62**
Nr of Observat.	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**	**79**

IAOPch5 denotes the change in median annual industry adjusted operating performance of the combined firm between the 5-year post- and the 5-year pre-merger periods.
IAOPch3 denotes the change in median annual industry adjusted operating performance of the combined firm between the 3-year post- and the 3- year pre-merger periods.
IAOPch2 denotes the change in median annual industry adjusted operating performance of the combined firm between the 2-year post- and the 2-year pre-merger periods.
IAOPch23 denotes the change in median annual industry adjusted operating performance of the combined firm between the years 2 and 3 and the year -1.
*** denotes significance at a 1% significance level using a two-tail test.
** denotes significance at a 5% significance level using a two-tail test.
* denotes significance at a 10% significance level using a two-tail test.
For the definition of the above dummy variables see Table 17, Chapter 6.

TABLE 18a (heteroscedasticity corrected (White))

Ghosh's (2001) Change Model. OLS regressions of the change in median annual industry adjusted operating performance of the combined firm between post- and pre- merger periods on dummy variables that describe certain merger characteristics.

EQUATION	1	2	3	4
INDEPENTEND VARIABLES	IAOP ch5	IAOP ch5	IAOP ch5	IAOP ch5
CONSTANT (a)	-0.084	-0.047*	-0.0859	-0.042
t-stat	-1.488	-1.837	-1.343	-2.013
MIX		-0.009		
t-stat		-0.233		
LG				-0.020
t-stat				-0.478
nCASH	0.035		0.032	
t-stat	0.584		0.947	
LGxRLTD				0.0411
t-stat				0.888
FRIENDLY			0.006	
t-stat			0.157	
RLTD	0.058	0.040	0.054	0.031
t-stat	0.970	1.386	1.446	1.230
RLTDxnCASH	-0.002			
t-stat	-0.038			
RLTDxMIX		0.020		
t-stat		0.456		
FRxRLTDxnCASH				
t-stat				
R SQ	0.107	0.086	0.108	0.097
ADJ R sq	0.071	0.050	0.060	0.061
F stat	3.01	2.37	2.26	2.7
Nr of Observations	79	79	79	79

IAOPch5 denotes the change in median annual industry adjusted operating performance of the combined firm between the 5-year post- and the 5-year pre-merger periods.
*** denotes significance at a 1% significance level using a two-tail test.
** denotes significance at a 5% significance level using a two-tail test.
* denotes significance at a 10% significance level using a two-tail test
For the definition of the above dummy variables see Table 17, Chapter 6.

In table 18a we include the linear and non-linear terms of regression equations. Nearly all coefficients are statistically insignificant[40].

6.9. Conclusions.

In this Chapter we presented the results on the effects of acquisitions on corporate operating performance after applying the methodology that was described in Chapter 4. The benchmark that was used to adjust performance was the median performance of other firms that belong to the same industries to that of the acquiree and the acquirer.

The main finding was that merging firms, on average, experience a statistically significant decline in annual performance of 1.7% in the post-merger years, once the effects of pre-acquisition performance are controlled for. Interestingly, while pre-acquisition performance appears to be equivalent to that of a firm's industry in the pre-merger years, it does not explain much of the variation of operating performance in the post-merger years.

Strategic acquisitions exhibited a statistically significant increase in their post-merger operating performance and related acquisitions perform better than unrelated ones. Hostile acquisitions exhibited a statistically significant decline in annual in performance in the post-acquisition years and large acquisitions outperform small ones. Firms that engaged in cash acquisitions exhibit a post-takeover performance decline, unlike firms that engaged in stock and mix acquisitions which perform as well as their industry peers. Finally, large acquisitions outperform other acquisitions while whether the acquisition closed at a premium appears to have no effect on post-merger performance. These results do not change when using either Regression Model or the Change Model.

[40] Multicollinearity tests have been implemented using tolerance, eigenvalues, condition index, and variance inflation factor. No multicollinearity waas detected.

CHAPTER 7.

OPERATING PERFORMANCE MEASUREMENT USING A MATCHED FIRMS BENCHMARK: RESULTS AND ANALYSIS.

7.1. Introduction.

In the previous Chapter, we estimated the adjusted operating cash flow returns on assets of merging firms using as a performance adjustment benchmark, the median industry operating performance. However, Ghosh (2001) argues that this benchmark might produce biased estimates of post-merger performance if acquirers outperform their industry peers in the pre-merger period or if they are relatively large firms. Healy et al, in their study, include the 50 largest acquisitions in terms of dollar value. Because large firms tend to outperform small ones and because typically firms undertake acquisitions after a period of superior performance, Ghosh critises Healy et al that they include a very particular dataset which may provide biased performance estimation. To make our empirical evidence comparable to that provided by both Ghosh and Healy and to avoid biases which might arise by factors which are related to size and pre-merger performance, in this Chapter, we examine the post-merger performance of merging firms using a pair of matched firms for each sample target and bidder. As discussed in Chapter 4 the matching was made on the basis of industry relatedness, pre-merger performance and size.

The results produced in this Chapter do not differ substantially from those derived in Chapter 6. Merging firms, on average, experience a performance decline in the post-merger years. Related and Strategic acquisitions exhibit a post-takeover performance improvement, while large acquisitions between firms with similar operations lead to an increase in performance. Using this benchmark for performance adjustment the method of payment appears to have no effect in post-merger performance. However, for our sample companies stock acquisitions perform better

than cash and mix acquisitions. Acquisitions that were completed during the first half of the time period under examination tend to perform better than later acquisitions.

The structure of this Chapter is as follows: In Section 2 the results from the univariate analysis of the post-takeover operating performance of the 71 sample companies[1] are presented. The operating performance of merging companies that are classified according to the method of the acquisition financing, the industry relatedness between target and bidder, and the attitude of each target's management towards the acquisition offer, is reported In Section 3. In Section 4 the post-merger performance of Strategic acquisitions is illustrated. In the fifth Section we report the results concerning the operating performance of acquisitions where the acquirer paid a relatively high premium for the target and of acquisitions where the target was purchased at a discount. The operating performance results for large and small acquisitions are reported in Section 6. In the seventh and eighth Sections the results from multivariate analysis after applying the Regression Model and the Change Model respectively, are reported. Finally in Chapter 9 we summarise the main findings of this Chapter.

7.2. Operating Performance relative to matched firms for the sample companies.

The operating cash flow return on total assets of the 71 combined targets and bidders for which data were available for their matched firms is illustrated in Table 1. The results from Panel A[2] of Table 1 indicate combined firms' median cash flow returns on assets decline from 16.43% in the entire pre-merger period to 13.31% in the 5 post-merger years. These figures are about the same as in Chapter 6, as it was

[1] The initial sample of the 79 targets and bidders was reduced to 71 because of the restrictions imposed by the pre-merger performance and size matching criteria (see chapter 4).

[2] Operating performance is measured as the operating cash flow returns on total assets. Operating cash flows are computed as sales, minus cost of goods sold, minus selling and administrative expenses, plus depreciation and goodwill expenses. Total assets are the market value of equity plus the book value of net debt and preferred stock at the beginning of each financial year. Changes in market values of equity of the acquirer and the acquiree at the merger announcement are excluded from the asset base for the post-merger years. Firms are matched on the basis of acquiring and target firms' performance and size one year prior to the acquisition from their respective industries. Pro-forma data of merged firms for pre-acquisition years are created by aggregating acquiring and target's firm data. Pro-forma data of matched firms are created by aggregating the data of the two matched firms. Matched-firm adjusted cash flow returns are calculated as the difference between each firm's value for each year and the value of the matched firm. Then the median of these differences is calculated for each year.

expected, since the performance metric is the same in this research design and the only difference stems from the fact that only 71 bidders and targets were used to measure performance instead of 79 in the previous Chapter. The interesting element of the results of this research design refers to matched firms adjusted operating performance which is illustrated in Column 2 of Panel A of Table 1.

As in Chapter 6, the results indicate a decline in adjusted operating performance after the merger, even after using an alternative benchmark which controls for pre-merger performance and size effects. Specifically, except from the year -5, in all pre-merger years the combined targets and bidders perform better than similar firms in their industries, though the difference is not statistically significant in any of the pre-merger years. Because the matching criterion referring to the pre-merger performance applied on the basis of the targets' and bidders' performance as at the year -1, the median difference in operating performance between the combined firm and the matching firms is only 0.08% in year -1. For the entire pre-merger period the matched firms adjusted operating performance is positive but statistically insignificant (0.22%), while the number of positive observations is 53.05%. After the merger, the adjusted operating performance deteriorates and becomes an insignificant of -0.84% in year 1 and declines further to -2.03% in year 2 (which is statically insignificant). In year 3 the adjusted operating performance is a negative of -1.70% and statistically significant at a 5% significance level (p-value 0.036). In years 4 and 5 performance improves to an insignificant level of -0.13% and to a positive and insignificant level of 0.62% respectively. It is obvious that the highest deterioration in operating performance in the post-merger years occurs in years 2 and 3 which seems plausible since in year 1 the effects of the merger may have not yet been observable while any problems in productivity may have been alleviated after four or five years. The adjusted operating performance in the entire 5-year post-merger period, however, is negative (-0.60%) and statistically significant at a 5% significance level (p-value 0.025). The results for the entire sample as illustrated in Panel A of Table 1 are consistent with the results that were produced using a research design which employed a portfolio of many firms from the respective industries as they were presented in Panel A of Table 1 in Chapter 6- instead of a pair of matched firms.

TABLE 1.

Median Annual Performance for the 71 sample companies.

Panel A

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Matched Firm - Adjusted Matched Median		% postitive	Number of observations
-5	18.54%	-1.08%		42.42%	33
-4	17.91%	0.90%		54.55%	33
-3	15.74%	1.47%		54.93%	71
-2	15.66%	0.99%		52.11%	71
-1	16.01%	0.08%		56.34%	71
Median Annual Performance for years -5 to -1	16.43%	0.22%		53.05%	279
1	12.68%	-0.84%		42.25%	71
2	12.56%	-2.03%		43.66%	71
3	13.31%	-1.70%	**b**	42.25%	71
4	14.67%	-0.13%		48.48%	33
5	16.06%	0.62%		57.58%	33
Median Annual Performance for years 1 to 5	13.31%	-0.60%	**b**	45.16%	279

Panel B

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.08%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years -1,-2, -3	0.40%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-1.38%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-1.08%	**b**
Δ **(MAOP)** Year -1, Years 2, 3	-2.10%	**b**
Δ **(MAOP)** Years -1, -2, -3 , Years1, 2, 3	-1.10%	
Δ **SALES**	13.48%	
Δ **Operating Costs**	16.02%	
Δ **Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3**	0.50%	
Δ **Employee costs per Sales**	0.91%	**c**
Δ **Number of employees per thousand of sales**	-0.25%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

The median change in adjusted operating performance between the years 2 and 3 and the year -1 is -2.10% and statistically significant at a 5% significance level (p-value 0.047) while the median change in operating performance between the 3 post- and pre-merger years is a negative but statistically insignificant value of -1.10% (Panel B[3] of Table 1).

The change in sales and in operating costs follows the same pattern as in Table 1, Panel B of Chapter 6, i.e., operating costs increase faster than sales after the merger. This is what was expected, as calculations in this research design include the 71 out of 79 merged firms for which the same calculations took place in Table 1, Panel B of Chapter 6. What is also interesting from the results presented in Panel B is the increase in the adjusted operating costs per sales. To adjust the median operating costs per sales of the combined sample companies for each year, the median operating cost per sales for each combined pair of matched firms was subtracted. The median change refers to the three post- and pre-merger years. In Panel B it can be seen that there is an increase in operating costs per sales for the merged firms relatively to the matched firms. This increase is 0.50%, though it is statistically insignificant.

The general finding for the sample companies is that there is a performance deterioration in the 5 post merger years relatively to the operating performance of matched firms that did not engage in merger activity.

7.3. Operating Performance for Mergers that Share Common Characteristics.

The operating performance of merged firms that belong to different sub-sets of the sample which were selected according to various merger characteristics is examined in this section. Such characteristics include whether the payment means was cash, stock, or a combination of them, whether targets and bidders had the same

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[3] **Δ (MAOP)** is the median of the difference between the median matched firm adjusted operating cash flow return on assets of years 3 to 1 and the median of years -1 to -3 for all the sample firms.
Δ SALES is the median of the change of each firm's median sales between the post- and pre- acquisition periods, for all the sample firms.
Δ Operating Costs is the median of the change of each firm's median operating costs between the post- and pre-acquisition periods for all the sample firms.
Δ Operating Costs per Sales-Adjusted is the median of the change of each firm's operating costs over sales after subtracting the relative value of the respective matched firm between the post-and pre-acquisition periods, for all the sample firms.

business operations before the merger and whether the acquisition offer was agreed with the target's management or not.

7.3. 1. The Method of Payment.

The results in Chapter 6 indicated a dramatic decline in post-merger operating performance for cash acquisitions when the operating performance benchmark is the median industry operating performance. When the performance benchmark is the operating performance of a pair of firms from the same industry as that of target and bidder which are matched to the combined entity on the basis of size and pre-merger performance, the results do not change substantially.

Indeed, in Column 3 of Panel A of Table 2, it can be seen that the adjusted operating cash flow return on assets in the 3 pre-merger years range from 0.40% in year -1 to 2.53% in the year -2. The median adjusted operating performance for the entire 3-year pre-merger period is positive (1.31%) but statistically insignificant. The number of positive observations for the same period is 62.22%. In the post-merger period, however, the median adjusted operating performance is negative for all the 3 years and for the entire period as well. In the year 1 it is -0.60%, it becomes -3.58% in year 2 with the number of positive observations being only 26.67%, and -0.37% in the year 3. The median adjusted operating performance for the entire year period is -2.03% and the number of positive observations falls to 40%. It is noteworthy, however, that none of these figures is statistically significant.

In Panel B of Table 2 the median adjusted operating performance in the 3 pre-merger years is 1.31% (though statistically insignificant), while the median adjusted operating performance for the 3 post-merger years is a statistically insignificant value of -0.66%. The median of the difference in operating performance between the years 2 and 3 and the year -1 is -2.60% which is statistically significant at a 10% significance level (p-value 0.088). The median difference in adjusted operating performance between the 3 post- and the 3 pre-merger years is also negative (-3.31%) but statistically insignificant. Sales increase less than operating

TABLE 2.

Median Annual Performance for the 15 acquisitions where the method of payment was cash.

Panel A[4]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Matched Firm - Adjusted Matched Median	% postitive	Number of observations
-3	16.31%	0.75%	53.33%	15
-2	17.42%	2.53%	73.33%	15
-1	14.28%	0.40%	60.00%	15
Median Annual Performance for years -5 to -1	16.31%	1.31%	62.22%	45
1	11.44%	-0.60%	46.67%	15
2	12.46%	-3.58%	26.67%	15
3	10.98%	-0.37%	46.67%	15
Median Annual Performance for years 1 to 5	12.11%	-2.03%	40.00%	45

Panel B[5]

CHANGE MODEL

MAOP-(Industry Adjusted Op. Performance): Median of Year -1	0.40%	
MAOP-(Industry Adjusted Op. Performance): Median of Years -1,-2, -3	1.31%	
MAOP-(Industry Adjusted Op. Performance): Median of Years 1, 2, 3	- 0.66%	
MAOP-(Industry Adjusted Op. Performance): Median of Years 2, 3	-1.99%	**c**
Δ **(MAOP)** Year -1, Years 2, 3	-2.60%	**c**
Δ **(MAOP)** Years -1, -2, -3 , Years1, 2, 3	-3.31%	
Δ **SALES**	12.33%	
Δ **Operating Costs**	16.33%	
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	0.37%	
Δ **Employee costs per Sales**	1.47%	**b**
Δ **Number of employees per thousand of sales**	-0.11%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[4] See footnote 2.
[5] See footnote 3.

costs in the post-merger years for the 15 cash acquisitions which are included in this research design as it was the case for the 16 cash acquisitions in Chapter 6[6]. The median matched firms adjusted change in operating Costs per Sales is 0.37% between the 3 post- and the 3 pre-merger years, which however is statistically insignificant.

In Table 3, Panel A, the performance of the 17 sample combined targets and acquirers that used stock as a means of payment for the acquisition is presented. Consistent with the findings of the previous Chapter, adjusted operating performance improves after the merger although this improvement is small and statistically insignificant. However, this finding becomes more important if it is considered in the context of the median post-merger performance of the entire sample as illustrated in Table 1. In other words while the sample companies experience a statistically significant deterioration in operating performance after the merger, for the 17 mergers where the method of payment was stock there is an improvement.

Specifically, the median adjusted operating cash flow return on assets increases from 0.22% in the entire pre-merger period to 0.62% in the entire post-merger period. However none of these figures is statistically significant. The number of positive observations increases from 52.31% to 55.38% in the same periods[7].

From Panel B of Table 3 the median change in operating performance between the years 2 and 3 and the year -1 and between the three post- and the three pre-merger years is negative but statistically insignificant in both the cases (in the first case the median change is -1.04% and in latter -0.18%). The matched firms adjusted change in operating costs per sales between the 3-year post- and pre-merger periods is negative (but statistically insignificant), indicating some improvement in costs relative to sales after the merger.

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[6] In fact, because the calculation of **ΔSales** and **ΔOperating costs** remains unaffected from the alternative benchmarks used to measure adjusted operating performance, it is expected that their values will remain about at the same levels as in Chapter 6 for each of the sub-samples of merged firms under examination. For this reason, in the rest of this Chapter a discussion on the values of these variables will be provided only when there is a substantial change from the respective results provided in Chapter 6.

[7] In Table 3 the number of observations for the years -4, -5, 4, and 5 is only 7 for each one of these years, since there were only 7 acquisitions that were financed by stock and where data for the acquirer and the target were available for 5 years. This makes the results for the respective years not representative for the whole sample. However it was considered useful to include these 28 observations in the calculations of the median operating performance and the statistical tests for the entire pre- and post-merger periods.

TABLE 3.

Median Annual Performance for the 17 acquisitions where the method of payment was stock.

Panel A[8]

Pre and Post-Merger Operating Cash Flow Returns

		Matched Firm - Adjusted			
Year Relative to Merger	Firm Median	Matched Median		% postitive	Number of observations
-5	19.56%	6.52%		57.14%	7
-4	22.91%	7.85%	c	85.71%	7
-3	12.48%	-0.74%		47.06%	17
-2	14.28%	-1.24%		41.18%	17
-1	13.15%	0.05%		52.94%	17
Median Annual Performance for years -5 to -1	16.43%	0.22%		52.31%	65
1	13.07%	-0.84%		41.18%	17
2	14.00%	0.62%		58.82%	17
3	13.98%	-0.14%		47.06%	17
4	15.42%	2.26%	c	71.43%	7
5	18.17%	3.65%		85.71%	7
Median Annual Performance for years 1 to 5	14.17%	0.62%		55.38%	65

Panel B[9]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.05%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years -1,-2, -3	-0.03%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-0.15%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-0.008%
Δ (MAOP) Year -1, Years 2, 3	-1.04%
Δ (MAOP) Years -1, -2, -3 , Years1, 2, 3	-0.18%
Δ SALES	16.55%
Δ Operating Costs	17.76%
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	**-0.48%**
Δ Employee costs per Sales	1.15%
Δ Number of employees per thousand of sales	-0.16% **b**

b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[8] See footnote 2.
[9] See footnote 3.

In Table 4, Panel A, the operating performance of firms that engaged in acquisitions where the method of payment was a combination of stock and cash is presented. The matched firms adjusted operating cash flow return on assets declines dramatically after the merger, especially during the first three post-merger years. This finding is different from what was the case when the benchmark used to evaluate the operating performance of the combined entity was the median industry performance (Table 6, in Chapter 6). In the entire pre-merger period the median merging firms' performance is about the same as that of matched firms and the number of positive observations is 50.92%.

In the entire post-merger period, however, the median difference between the operating performance of the combined entities and the operating performance of the matched firms is -1.35% and significant at a 10% significance level (p-value 0.07) with only 42.33% of the observations being positive. The highest decline in the post-merger years is observed at year 3 where the adjusted operating performance is -2.97% and significant at a 5% significance level (p-value 0.035).

In Panel B also, it can be seen that the median change in operating performance between years 2 and 3 and the year -1 is -2.10% and significant at a 10% significance level (p-value 0.076) The median change between the 3 post- and the 3 pre-merger years is also negative (-1.10%) but statistically insignificant). The median change in adjusted operating costs per sales for the same period is 1.15% and significant at a 1% significance level (p-value 0.001). This last finding indicates that operating costs increase disproportionably to sales after the merger and that merged firms while increase sales do not manage costs efficiently.

TABLE 4.

Median Annual Performance for the 39 acquisitions where the acquirer offered a choice between cash and stock to the target's shareholders.

Panel A[10]

Pre and Post-Merger Operating Cash Flow Returns

		Matched Firm - Adjusted			
Year Relative to Merger	Firm Median	Matched Median		% postitive	Number of observations
-5	15.36%	-1.78%		34.78%	23
-4	17.42%	-0.18%		47.83%	23
-3	15.78%	1.92%		58.97%	39
-2	16.43%	-0.22%		48.72%	39
-1	17.35%	0.06%		56.41%	39
Median Annual Performance for years -5 to -1	16.87%	0.05%		50.92%	163
1	12.44%	-1.35%		41.03%	39
2	12.32%	-2.25%		43.59%	39
3	13.07%	-2.97%	**b**	38.46%	39
4	13.62%	-0.24%		43.48%	23
5	16.06%	-0.26%		47.83%	23
Median Annual Performance for years 1 to 5	13.03%	-1.35%	**a**	42.33%	163

Panel B[11]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.06%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Yrs -1,-2, -3	0.06%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-2.38%	**c**
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-2.82%	**c**
Δ **(MAOP)** Year -1, Years 2, 3	-2.10%	**c**
Δ **(MAOP)** Years -1, -2, -3 , Years1, 2, 3	-1.10%	
Δ SALES	6.89%	
Δ Operating Costs	11.50%	
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	1.15%	**a**
Δ Employee costs per Sales	0.05%	
Δ Number of employees per thousand of sales	-0.33%	

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[10] See footnote 2.
[11] See footnote 3.

In summary, acquisitions that were financed solely by stock appear to perform better than acquisitions that were financed solely by cash or by a combination of stock and cash. Stock acquisitions perform as well as the matched firms in the post-merger period whereas mixed acquisitions perform worse than the control firms in the entire post-merger period. Both cash and mixed acquisitions exhibit a statistically significant change in the median matched-firm adjusted operating performance between the years 2 and 3 and the year -1.

7.3.2. The Target's Management Attitude.

The results in the previous Chapter indicated that firms engaged in hostile takeovers underperform their industry peers in the post-merger year while in agreed takeovers firms manage to keep their post-merger performance at about the same levels as their industry peers. In Table 5, Panel A results confirm that firms that conduct hostile takeovers perform worse than other firms in the same industry and of a similar size and similar pre-merger performance. However, when the benchmark is industry performance the decline effect is higher than when the benchmark is a pair of matched firms[12].

Panel A results indicate that in the 3-year pre-merger period the median matched firms adjusted operating cash flow returns on assets is 0.67%. This figure is not statistically significant but indicates that the combined entities' performances are at least at the level of pairs of similar firms. More importantly, for the entire period, the number of positive observations is 52.08%. In the 3-year post-merger period, however, the median matched firm adjusted operating cash flow return on assets is a negative -0.45% (though statistically insignificant). The number of positive observations falls to 41.67%. Again, the worst level of performance is observed in year 2 and 3.

[12] See Table 7 in Chapter 6.

TABLE 5.

Median Annual Performance for the 16 acquisitions where the acquirer made a hostile bid for the acquiree.

Panel A[13]

Pre and Post-Merger Operating Cash Flow Returns

		Matched Firm - Adjusted		
Year Relative to Merger	Firm Median	Matched Median	% postitive	Number of observations
-3	17.05%	-0.28%	43.75%	16
-2	17.26%	-1.58%	43.75%	16
-1	15.91%	1.22%	68.75%	16
Median Annual Performance for years -5 to -1	16.71%	0.67%	52.08%	48
1	12.26%	0.47%	50.00%	16
2	12.39%	-3.46%	37.50%	16
3	12.87%	-0.45%	37.50%	16
Median Annual Performance for years 1 to 5	12.43%	-0.45%	41.67%	48

Panel B[14]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	1.22%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years -1,-2, -3	1.06%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-0.09%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-0.33%
Δ **(MAOP)** Year -1, Years 2, 3	-1.79%
Δ **(MAOP)** Years -1, -2, -3 , Years1, 2, 3	-0.91%
Δ SALES	4.86%
Δ Operating Costs	3.56%
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	-1.77%
Δ Employee costs per Sales	1.03%
Δ Number of employees per thousand of sales	-0.33% **a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.

In Panel B of Table 5 it can be seen that the median adjusted 3-year pre-merger operating performance is 1.06% (but statistically insignificant) while the

[13] See footnote 2.
[14] See footnote 3.

years 2 and 3 median adjusted operating performance is a negative and statistically insignificant -0.33%. In the 3-year post-merger period the median adjusted operating performance is -0.09% and statistically insignificant, i.e. very close to the median performance of the pair of matched firms. The median change in operating performance between the years 2 and 3 and the year -1 is -1.79% indicating a statistically insignificant decline. The median change in operating cash flow return on assets between the 3 post-merger years and the 3 pre-merger years is a statistically insignificant of -0.91%. The median matched firms adjusted change in operating costs per sales between the post- and pre-merger periods is -1.77% (though statistically insignificant) implying a positive improvement in operating costs relative to sales after the acquisition. The possible improvement in operating costs per sales suggests that hostile acquisitions may increase efficiency in terms of economising in operating costs, or in terms of increasing sales. The possible decline in operating performance, however, may occur due to other costs which may arise from the disruption in operations caused after the target's management replacement and the change of their ongoing projects. Such disruption typically accompanies hostile takeovers.

As far as the friendly acquisitions are concerned, the results from Panel A of Table 6 indicate a decline of median operating performance in the post-acquisition period.

In the entire pre-merger period the median matched firm adjusted operating cash flow return on assets is 0.40%. This figure is statistically insignificant implying that the combined firms perform at the same levels as the matched firms. The number of positive observations is 54.46%. In the entire 5-year post-merger period the median matched firm adjusted operating cash flow return on assets is a negative of -1.07% which is statistically significant at a 5% significance level (p-value 0.034). The number of positive observations falls to 44.60%. The highest decline in performance is observed at the year 3, with the median adjusted operating cash flow return on assets being -2.94%. This figure is statistically significant at a 5% significance level (p-value 0.050). In year 2 the decline is also high (-1.81%, and the number of positive observations is 45.45%) but statistically insignificant.

TABLE 6.

Median Annual Performance for the 55 acquisitions where the acquirer made an agreed offer to the acquiree.

Panel A[15]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Matched Firm - Adjusted Matched Median		% postitive	Number of observations
-5	17.95%	-0.87%		45.83%	24
-4	17.76%	2.43%		58.33%	24
-3	15.74%	1.90%		58.18%	55
-2	14.62%	1.24%		54.55%	55
-1	16.01%	0.05%		52.73%	55
Median Annual Performance for years -5 to -1	16.25%	0.40%		54.46%	213
1	13.07%	-0.98%		40.00%	55
2	12.56%	-1.81%		45.45%	55
3	13.48%	-2.94%	**b**	43.64%	55
4	14.42%	-0.19%		45.83%	24
5	16.20%	0.51%		54.17%	24
Median Annual Performance for years 1 to 5	13.68%	-1.07%	**b**	44.60%	213

Panel B[16]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.05%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Yrs -1,-2, -3	0.06%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-1.70%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-1.99% **c**
Δ (**MAOP**) Year -1, Years 2, 3	-2.10%
Δ (**MAOP**) Years -1, -2, -3 , Years1, 2, 3	-1.11%
Δ SALES	17.51%
Δ Operating Costs	16.92%
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	1.42% **b**
Δ Employee costs per Sales	0.91% **c**
Δ Number of employees per thousand of sales	-0.18% **b**

b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[15] See footnote 2.
[16] See footnote 3.

In year 4 performance improves (-0.19%) and in year 5 becomes positive (0.51% with 54.17% of the observations being positive) but statistically insignificant.

Panel B of Table 6 shows the median matched firm adjusted difference in operating performance between post- and pre-merger years. This difference is -2.10% between the years 2 and 3 and the year -1 and 1.11% between the years 1, 2 and 3 and the years -1, -2, and -3. The median matched firm adjusted operating performance for the years 2 and 3 is -1.99% and statistically significant at a 10% significance level (p-value 0.077). The adjusted operating costs per sales increase after the merger by a significant (at a 5% significance level, p-value 0.017) 1.42%, suggesting that friendly acquisitions increase inefficiencies since operating costs increase disproportionably relatively to sales.

The above results provide some evidence that the performance of friendly acquisitions declines after the merger. This is in contrast with the evidence that was produced when the benchmark for measuring performance was the firms from the respective industries (see Table 8 in Chapter 6). In other words, when controlling for size and pre-merger performance effects friendly acquisitions seem to perform worse than when the performance is compared with other industry firms.

7.3.3. The Industry Relatedness.

In Table 7 it is shown that unrelated acquisitions cause a decline in operating performance in the post-merger years. This evidence is consistent with the general view that prevails in the literature that diversification destroys value. It is also consistent with the results that illustrated in Table 9 of Chapter 6.

In Panel A of Table 7 the median matched firm adjusted operating performance of the 24 unrelated acquisitions of the sample is illustrated. In Column 2 it can be seen that in the 3 pre-merger years the median adjusted operating performance is close to zero (-0.08% and statistically insignificant), indicating that the merging firms perform as well as the matched firms. The number of positive observations is 48.61%.

TABLE 7

Median Annual Performance for the 24 acquisitions where the acquirers and acquirees belong to different Level 5 Industrial Sectors.

Panel A[17]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Matched Median (Matched Firm - Adjusted)		% postitive	Number of observations
-3	15.90%	-2.62%		41.67%	24
-2	16.82%	0.82%		54.17%	24
-1	17.47%	0.01%		50.00%	24
Median Annual Performance for years -5 to -1	16.89%	-0.08%		48.61%	72
1	12.38%	-2.24%		29.17%	24
2	13.40%	-3.14%		45.83%	24
3	13.69%	-2.32%	**c**	37.50%	24
Median Annual Performance for years 1 to 5	13.11%	-2.65%	**a**	37.50%	72

Panel B[18]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.01%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years -1,-2, -3	-0.10%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-3.24%	**b**
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-2.23%	**c**
Δ (**MAOP**) Year -1, Years 2, 3	-1.81%	**c**
Δ (**MAOP**) Years -1, -2, -3 , Years1, 2, 3	-2.23%	
Δ SALES	15.02%	
Δ Operating Costs	14.07%	
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	0.55%	
Δ Employee costs per Sales	1.63%	**a**
Δ Number of employees per thousand of sales	-0.37%	

a

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[17] See footnote 2.
[18] See footnote 3.

However, in the 3-year post-merger period the number of positive observations falls to 37.50% and the median adjusted operating performance for the entire period is -2.65% and statistically significant at a 1% significance level (p-value 0.008). In each of the 3 post-merger years the median adjusted operating performance is negative; it is -2.24% in year 1 with 29.17% of the observations being positive and -3.14% in year 2 with 45.83% of the observations being positive. These performance figures, however, are statistically insignificant. In year 3 performance is negative (-2.32%) and statistically significant at a 10% significance level (p-value 0.076). The number of positive observations is 37.5%.

The results from Panel B of Table 7 also indicate a decline in the post-merger performance following unrelated acquisitions. The median matched firm adjusted operating performance in year -1 is 0.01% and the respective figure for the 3 pre-merger years is -0.10% both statistically insignificant indicating that merging firms and matched firms exhibit similar performance. In the 3 post-merger years, however, the median adjusted performance is -3.24% and statistically significant at a 5% significance level (p-value 0.049). In the years 2 and 3, the median adjusted performance is -2.23% and statistically significant at a 10% significance level (p-value 0.056). More importantly, the median difference in adjusted operating performance between years 2 and 3 and the year -1 is -1.81% and statistically significant at a 10% significance level (p-value 0.076). The median difference in adjusted operating performance between the 3 post- and the 3 pre-merger years is negative (-2.23%) but statistically insignificant. The median change in adjusted operating costs per sales is 0.55% (but statistically insignificant) indicating a higher increase in operating costs relative to sales after the merger.

Table 8 illustrates the pre- and post-merger operating performance of the 47 acquisitions where bidder's and target's operations fall within the same Level 5 Industrial Classification.

In Column 3 it can be seen that merging firms outperform matched firms in the pre-merger period. Specifically, in the entire 5-year pre-merger period the median matched firm adjusted operating cash flow return on assets is 0.90% and statistically significant at a 10% significance level (p-value 0.062) with the number of positive observations being 57.22%.

TABLE 8

Median Annual Performance for the 47 acquisitions where the acquirer belong to the same Level 5 Industrial Sector with that of the acquiree in the year before the takeover.

Panel A[19]

Pre and Post-Merger Operating Cash Flow Returns

		Matched Firm - Adjusted		
Year Relative to Merger	Firm Median	Matched Median	% postitive	Number of observations
-5	18.54%	1.30%	52.17%	23
-4	17.91%	1.77%	60.87%	23
-3	15.74%	2.07%	61.70%	47
-2	14.15%	0.99%	51.06%	47
-1	15.35%	0.10%	59.57%	47
Median Annual Performance for years -5 to -1	15.78%	0.90% **c**	57.22%	187
1	12.93%	-0.15%	48.94%	47
2	12.41%	-1.81%	42.55%	47
3	13.03%	-0.37%	44.68%	47
4	13.53%	-0.84%	34.78%	23
5	16.06%	0.42%	56.52%	23
Median Annual Performance for years 1 to 5	13.03%	-0.37%	45.45%	187

Panel B[20]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.14%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Yrs -1,-2, -3	1.18%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-0.46%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-0.71%
Δ (MAOP) Year -1, Years 2, 3	-2.13%
Δ (MAOP) Years -1, -2, -3 , Years1, 2, 3	-0.91%
Δ SALES	13.78%
Δ Operating Costs	16.40%
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	0.69%
Δ Employee costs per Sales	0.76%
Δ Number of employees per thousand of sales	-0.22% **a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[19] See footnote 2.
[20] See footnote 3.

This is an indication that bidders and targets which are engaged in horizontal acquisitions are profitable firms which outperform similar firms in their industries. It is noteworthy that from the 47 horizontal acquisitions the 36 are agreed transactions, a fact that indicates that best performers follow an acquisition strategy towards friendly and horizontal mergers. In the post-merger years operating performance is about at the same levels as that of the matched firms. In other words, there is no decline or improvement in operating cash flow return on assets relative to matched firms. Specifically, for the entire 5-year post-merger period the median matched firm adjusted operating performance is -0.37% and statistically insignificant which means that the combined entity performs as well as the pair of matched firm. However, there is a decline to the number of positive observations from 57.22% in the pre-merger period to 45.45% in the post-merger period.

This is because in the pre-merger period the combined firms outperform the matched firms and not because of a deterioration in performance of the merged firms relatively to the matched firms in the post-merger period. Results from Panel B strengthen this finding. The median change in matched firm adjusted performance between the years 2 and 3 and the year -1 is -2.13% but it is statistically insignificant. The median change in adjusted performance between the 3-year post-merger period and the 3-year pre-merger period is an insignificant of -0.91%. The median adjusted operating costs per sales increase by 0.69%, which however is statistically insignificant.

Overall, our results indicated that unrelated acquisitions perform worse than related ones. In the three year post-takeover period the matched firm adjusted operating performance of unrelated acquisitions is negative and statistically significant. The median change in matched firm adjusted operating performance between the years 2 and 3 and the year -1 is also negative and statistically significant. Related acquisitions, on the other hand, do not exhibit any statistically significant change in the median matched firm adjusted operating performance between the post- and the pre-merger periods. Moreover, they perform as well as their matched firms in the post-takeover years (however they appear to outperform their matched firms in the entire pre-merger period).

7. 4. Operating Performance of Strategic Acquisitions.

In the previous Chapter the median performance of Strategic Acquisitions was found to be higher in the post-merger period than the median performance of the sample acquisitions. Firms that were engaged in strategic mergers achieved to keep their performance near their industry's standards. In Table 9 the median performance of firms that conducted strategic acquisitions is illustrated with the benchmark for comparison being the performance of similar firms on the basis of size and pre-merger performance.

In Column 3 of Panel A it can be seen that in the pre-merger years the median performance of the combined entity is higher than that of the matched firm. In the year -4 the median matched firm adjusted operating performance is 3.25% and statistically significant at a 10% significance level (p-value 0.098). The number of positive observations is 68.75%. In the year -3 the adjusted performance is 2.66% which is statistically significant at a 5% significant level (p-value 0.026) and the number of positive observations is 69.23%. In the years -2 and -1 the median performance of the combined entity converges to that of the matched firms since the selection of the matched firms was made on the basis of the performance as at the beginning of the year -1. In the entire pre-merger period the median adjusted operating performance is 1.50% and statistically significant at a 1% significance level (p-value 0.01). Thus, firms that were engaged in friendly acquisitions which were financed by stock or a combination of stock and cash within the same Level 5 industrial sector outperform similar firms in their industries; a finding that indicates that such firms are more profitable and more efficient than similar firms in their industries in the pre-merger years.

In the post-merger period the median performance of firms that engaged in strategic acquisitions is equivalent to that of the median firms. In each of the post-merger years the matched firm adjusted operating cash flow return on assets is not statistically significant. In the entire 5-year post-merger period the adjusted performance is -0.14% which is statistically insignificant and the proportion of positive observations is 49.09%.

TABLE 9

Median Annual Performance for the 26 acquisitions where the method of payment was stock or a combination of stock and cash and the bidder and the target belonged to the same Level 5 Industrial Sector, and the bid was friendly.

Panel A[21]

Pre and Post-Merger Operating Cash Flow Returns

		Matched Firm - Adjusted			
Year Relative to Merger	Firm Median	Matched Median		% postitive	Number of observations
-5	17.51%	1.87%		56.25%	16
-4	18.76%	3.25%	c	68.75%	16
-3	16.56%	2.66%	b	69.23%	26
-2	13.56%	0.20%		50.00%	26
-1	16.47%	0.06%		57.69%	26
Median Annual Performance for years -5 to -1	16.58%	1.50%	a	60.00%	110
1	16.97%	0.29%		53.85%	26
2	13.92%	-0.34%		50.00%	26
3	13.79%	-1.43%		46.15%	26
4	12.98%	-0.19%		43.75%	16
5	17.07%	-0.07%		50.00%	16
Median Annual Performance for years 1 to 5	14.69%	-0.14%		49.09%	110

Panel B[22]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.06%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Yrs -1,-2, -3	1.26%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-0.71%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-0.51%
Δ (MAOP) Year -1, Years 2, 3	-1.12%
Δ (MAOP) Years -1, -2, -3 , Years1, 2, 3	-0.74%
Δ SALES	25.78%
Δ Operating Costs	28.55%
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	1.56%
Δ Employee costs per Sales	0.25%
Δ Number of employees per thousand of sales	-0.25% **a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 5% significance level using a two-tailed Wilcoxon test.

[21] See footnote 2.
[22] See footnote 3.

In strategic acquisitions, therefore, firms manage to keep performance at levels equivalent to those of their control firms in the post-merger period.

The findings in Panel B of Table 9 indicate that strategic mergers perform as well as their matched firms. The median change in operating performance between the years 2 and 3 and the year -1 is -1.12% but this figure is statistically insignificant. The median change in adjusted operating performance between the 3 post-merger years and the 3 pre-merger years is also insignificant (-0.74%). The median adjusted operating performance of the years -1, -2 and -3 is 1.26% but is statistically insignificant. The median change in the adjusted operating costs per sales between the 3-year post-merger period and the 3-year post-merger period is positive (1.56%) but it is statistically insignificant.

7. 5. Operating Performance and Acquisition Premium.

In Chapter 6 we found evidence that the acquisition premium is negatively associated with post-merger performance when the performance benchmark was the performance of other companies operating in the same Level 5 Industrial Sector. In acquisitions where the acquirer paid a high premium over the intrinsic value of the target the post merger performance deteriorated, while in acquisitions where the acquirer paid less than the intrinsic value of the target post-merger performance was around industry standards.

In Panel A of Table 10, the annual operating performance of the 24 acquisitions where the acquirer paid a premium between 162% and 658.5% of the target's market value as at the beginning of the year -1 is illustrated, with the benchmark of operating performance for each target and bidder being a pair of similar firms on the basis of size and pre-merger performance within the respective industries. As can be seen in Column 3 the median matched firm adjusted operating performance in each of the pre-merger years is statistically indistinguishable from zero, indicating that the median combined target and bidder performs as well as their matched firms. In the entire post-merger period the median adjusted performance is -0.47% and statistically insignificant. The number of positive observations is 48.96%.

TABLE 10

Median Annual Performance for the 24 cases of the sample where the acquirer paid a premium between 162% and 658.5% of the acquiree's market value as at the beginning of the year -1.

Panel A[23]

Pre and Post-Merger Operating Cash Flow Returns

Matched Firm - Adjusted

Year Relative to Merger	Firm Median	Matched Median		% postitive	Number of observations
-5	15.32%	0.11%		50.00%	12
-4	11.61%	-1.87%		33.33%	12
-3	14.66%	-0.49%		50.00%	24
-2	14.28%	0.22%		50.00%	24
-1	15.09%	0.03%		54.17%	24
Median Annual Performance for years -5 to -1	14.69%	-0.47%		48.96%	96
1	12.40%	-0.25%		50.00%	24
2	12.43%	-3.28%	**c**	33.33%	24
3	13.35%	-6.03%	**b**	37.50%	24
4	12.69%	-0.80%		41.67%	12
5	14.83%	-0.43%		50.00%	12
Median Annual Performance for years 1 to 5	12.51%	-1.37%	**a**	41.67%	96

Panel B[24]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1 .	0.03%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years -1,-2, -3	-0.27%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-1.97%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-4.25%	**b**
Δ (MAOP) Year -1, Years 2, 3	-4.74%	**b**
Δ (MAOP) Years -1, -2, -3 , Years1, 2, 3	0.10%	
Δ SALES	28.17%	
Δ Operating Costs	28.93%	
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	-0.21%	
Δ Employee costs per Sales	0.90%	
Δ Number of employees per thousand of sales	-0.18%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[23] See footnote 2.
[24] See footnote 3.

However, in the post-merger years, performance declines dramatically. After year 1 where median operating performance of the combined entity is similar to that of the matched firms, the median matched firm adjusted operating cash flow return on assets deteriorates, in year 2 to -3.28%. This figure is statistically significant at a 10% significance level (p-value 0.052) and the number of positive observations is 33.33%. In year 3 adjusted performance declines further to -6.03%, a figure which is statistically significant at a 5% significance level (p-value 0.013). The number of positive observations is 37.50%. In the year 4 the performance decline is reduced and in the year 5 the adjusted operating performance is -0.43% but statistically insignificant with 50% of the observations being positive.

In the entire post-merger period the median adjusted operating performance is a negative of -1.37% which is statistically significant at a 1% significance level (p-value 0.010). The number of positive observations falls to 41.67%.

These findings are confirmed by the results that are produced by the Change Model and are illustrated in Panel B. The median adjusted operating performance in the years 2 and 3 is -4.25% and statistically significant at a 5% significance level (p-value 0.012).

The median difference in matched firm adjusted operating cash flow return on assets between the years 2 and 3 and the year -1 is -4.74% and statistically significant at a 5% significance level (p-value 0.026). However, when the median change in performance is measured between the 3 post- and the 3 pre-merger years, it is 0.10% but indistinguishable from zero. This is probably because the highest decline in performance occurs in the second and the third post-merger years. The median change in adjusted operating costs per sales is negative (-0.21%) but statistically insignificant.

In Table 11 the operating performance of firms that engaged in acquisitions where the acquirer purchased the target at a price below its intrinsic value is illustrated. The combined targets and bidders outperform their matched firms in the entire pre-merger period. The median matched firm adjusted operating performance is 1.43% and statistically significant at a 5% significance level (p-value 0.016), while the number of positive observations is 59.60%.

TABLE 11

Median Annual Performance for the 25 acquisitions where the acquirer paid an amount that ranges from 16% to 100% of the acquiree's market value as at the beginning of the year -1.

Panel A[25]

Pre and Post-Merger Operating Cash Flow Returns

		Matched Firm - Adjusted			
Year Relative to Merger	Firm Median	Matched Median		% postitive	Number of observations
-5	19.42%	-2.35%		41.67%	12
-4	19.88%	2.17%		66.67%	12
-3	17.11%	3.23%	**c**	68.00%	25
-2	17.10%	2.77%	**b**	64.00%	25
-1	15.15%	0.17%		52.00%	25
Median Annual Performance for years -5 to -1	17.35%	1.43%	**b**	59.60%	99
1	12.68%	-1.07%		44.00%	25
2	12.37%	-1.81%		44.00%	25
3	13.98%	0.52%		52.00%	25
4	15.42%	0.82%		50.00%	12
5	15.47%	2.31%		66.67%	12
Median Annual Performance for years 1 to 5	13.28%	-0.03%		49.49%	99

Panel B[26]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.17%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Yrs -1,-2, -3	1.53%	**b**
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-0.03%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-0.98%	
Δ **(MAOP)** Year -1, Years 2, 3	-1.30%	
Δ **(MAOP)** Years -1, -2, -3 , Years1, 2, 3	-0.95%	
Δ **SALES**	2.13%	
Δ **Operating Costs**	3.15%	
Δ **Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3**	0.37%	
Δ **Employee costs per Sales**	1.37%	**b**
Δ **Number of employees per thousand of sales**	-0.25%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[25] See footnote 2.
[26] See footnote 3.

In the year -3 the adjusted performance is 3.23% and statistically significant at a 10% significance level (p-value 0.069). The number of positive observations is 68%. In the year -2 the median combined target and bidder outperforms the matched firm by 2.77% which is statistically significant at a 5% significance level (p-value 0.037). The number of positive observations is 64%.

In the post-merger period the median matched firm adjusted operating cash flow return on assets is indistinguishable from zero in each of the post-merger years indicating that the median combined entity perform as well as the pair of the control firms. In the years 1 and 2 the adjusted performance is negative and improves after the year 2. In the entire post-merger period the adjusted performance is close to zero (-0.03%) and statistically insignificant with the number of positive observations being 49.49%.

In Panel B of Table 11 it can be seen that although in the 3 pre-merger years the median matched firm adjusted operating performance is 1.53% and statistically significant at a 5% significance level (p-value 0.045), the median change in adjusted operating performance between the 3 post-merger years and the 3 pre-merger years is statistically insignificant (though negative of -0.95%). The median change in adjusted performance between the years 2 and 3 and the year -1 is also negative but statistically insignificant (-1.30). The median change in adjusted operating costs per sales is 0.37% but statistically insignificant, indicating that there is not a substantial increase after the merger.

As far as the relation between the premium paid in the transaction and the post merger performance, the results in this Chapter are consistent to the findings provided in Chapter 6. Acquisitions in discount seem to perform better than acquisitions in premium.

7. 6. Operating Performance and Relative Size.

On the basis of the segmentation of the sample into large and small acquisitions that was discussed in the previous Chapter we identified 34 large acquisitions and 35 small acquisitions that met the necessary criteria for being

included in the sample of the 71 acquisitions for which there were available data for the matched firms.

TABLE 12

Median Annual Performance for the 34 largest acquisitions of the sample. Relative bidders' size ranges from 7% to 317% of the size of target; size is based on market values of the two firms at the beginning of year -1.

Panel A[27]

Pre and Post-Merger Operating Cash Flow Returns

		Matched Firm - Adjusted		
Year Relative to Merger	Firm Median	Matched Median	% postitive	Number of observations
-5	19.25%	-1.78%	40.00%	15
-4	19.60%	2.56%	73.33%	15
-3	15.64%	1.45%	55.88%	34
-2	15.73%	1.15%	52.94%	34
-1	16.69%	0.16%	52.94%	34
Median Annual Performance for years -5 to -1	17.13%	0.75%	54.55%	132
1	15.70%	-1.21%	44.12%	34
2	13.16%	0.34%	52.94%	34
3	14.20%	0.77%	52.94%	34
4	15.42%	-0.13%	46.67%	15
5	16.34%	1.41%	60.00%	15
Median Annual Performance for years 1 to 5	14.44%	0.20%	50.76%	132

Panel B[28]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.10%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years -1,-2, -3	1.05%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	0.62%
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	0.30%
Δ (MAOP) Year -1, Years 2, 3	0.85%
Δ (MAOP) Years -1, -2, -3 , Years1, 2, 3	0.18%
Δ SALES	13.48%
Δ Operating Costs	10.92%
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	0.14%
Δ Employee costs per Sales	0.89%
Δ Number of employees per thousand of sales	-0.31% **a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.

[27] See footnote 2.
[28] See footnote 3.

In Table 12, Panel A the operating performance of the firms that engaged in the 34 largest acquisitions is illustrated. As it can be seen from Column 3 the median firm adjusted operating cash flow return on assets is close to zero in both the pre- and the post-merger period. This means that in large acquisitions the median combined entity manage to achieve performance standards equivalent to those of its matched pair of firms. There is, however, a slight decline in performance between the two periods from 0.75% to 0.20% but it is statistically insignificant.

These findings are also confirmed by results that are illustrated in Panel B. The median change in matched firm adjusted operating performance between the 3-year post-merger period and the 3-year pre-merger period is 0.18% but statistically insignificant. The median change in adjusted operating performance between the years 2 and 3 and the year -1 is 0.85% but also statistically insignificant.

The median matched firm adjusted operating costs per sales is 0.14% but statistically insignificant.

In Table 13 the median annual operating performance of the firms that were engaged in the 35 smallest acquisitions in the sample is illustrated. Adjusted operating performance, while being at control firms' standards in each of the pre-merger years, declines dramatically in the post-merger period. Specifically, the median annual matched firm adjusted operating cash flow return on assets ranges from -0.68% in the year -4 to 2.07% in the year -3. In each of the pre-merger years the adjusted performance is indistinguishable from zero, i.e. it is equivalent to that of the control firms. In the entire pre-merger period the median annual matched firm adjusted operating performance is 0.17% and statistically insignificant with the 53.24% of the observations being positive.

In the post-merger years, performance declines to an insignificant of -0.90% in year 1, then declines further to -3.54% (which is statistically significant at a 10% significance level (p-value 0.077)) in year 2, and it becomes -5.76% which is statistically significant at a 1% significance level (p-value 0.008) in year 3. In years 4 and 5 performance improves to a statistically insignificant value of 0.67% and to a statistically insignificant 0.40% respectively.

TABLE 13

Median Annual Performance for the 35 smallest acquisitions of the sample. Relative bidders' size ranges from 400% to 37516% of the size of target; size is based on market values of the two firms at the beginning of year -1.

Panel A[29]

Pre and Post-Merger Operating Cash Flow Returns

Year Relative to Merger	Firm Median	Matched Firm - Adjusted Matched Median		% postitive	Number of observations
-5	15.49%	-0.40%		47.06%	17
-4	17.21%	-0.68%		41.18%	17
-3	16.31%	2.07%		57.14%	35
-2	15.66%	0.99%		54.29%	35
-1	14.31%	0.05%		57.14%	35
Median Annual Performance for years -5 to -1	15.69%	0.17%		53.24%	139
1	11.62%	-0.98%		40.00%	35
2	12.46%	-3.54%	**c**	31.43%	35
3	13.07%	-5.76%	**a**	34.29%	35
4	14.67%	0.67%		52.94%	17
5	16.06%	0.40%		52.94%	17
Median Annual Performance for years 1 to5	12.89%	-1.38%	**a**	39.57%	139

Panel B[30]

CHANGE MODEL

MAOP-(Matched Firm Adjusted Op. Performance): Median of Year -1	0.05%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years -1,-2, -3	0.40%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 1, 2, 3	-2.24%	
MAOP-(Matched Firm Adjusted Op. Performance): Median of Years 2, 3	-3.57%	**b**
Δ (MAOP) Year -1, Years 2, 3	-4.25%	**a**
Δ (MAOP) Years -1, -2, -3 , Years1, 2, 3	-3.00%	**c**
Δ SALES	12.33%	
Δ Operating Costs	16.63%	
Δ Operating Costs per Sales-Adjusted, Years -1,-2,-3, Years 1,2,3	1.13%	**c**
Δ Employee costs per Sales	1.15%	**c**
Δ Number of employees per thousand of sales	-0.12%	**a**

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[29] See footnote 2.
[30] See footnote 3.

However, this improvement is not enough to offset the decline in annual operating performance in the 3 previous years. Thus, the adjusted operating performance for the entire 5-year post-merger period is -1.38% and statistically significant at a 1% significance level (p-value 0.001). The number of positive observations falls from 53.24% in the 5-year pre-merger period to 39.57% in the entire post-merger period.

In Panel B it can be seen that the median change in matched firm adjusted operating cash flow return on assets between the year 2 and 3 and the year -1 is a negative of -4.25% which is statistically significant at a 1% significance level (p-value 0.007). The median change in operating performance between the 3-year post and the 3-year pre-merger period is -3% and statistically significant at a 10% significance level (p-value 0.89). The median adjusted operating costs increase relative to sales by a significant of 1.13% (p-value 0.08).

The findings in Tables 12 and 13 indicate that firms that are engaged in large acquisitions outperform the typical acquisition in the sample. Moreover, small acquisitions lead to performance deterioration and to an increase of the operating costs relative to sales. This evidence is consistent with that provided in Chapter 6.

7.7. Abnormal Matched Firm Adjusted Cash Flow Returns.

In this section the results from running regression (4.10) as described in Chapter 4 are given. Regression (4.10) represents Healy's et. al. (1992) model, which for reasons of comparison with results from the previous Chapter, is run here using matched firm adjusted operating cash flow returns on total assets. The variables *MAOPpre* and *MAOPpost* denote the median matched firm adjusted operating performance in the pre- and the post-merger years respectively. For 33 acquisitions pre-merger and post-merger periods extend to 5 years, whereas – due to the lack of data - for 37 acquisitions pre- and post-merger periods extend to 3 years. All other dummy variables are defined as in Chapter 6. The intercept (a) of the regression captures the percentage change in matched firm adjusted operating cash flow returns on total assets which are attributable to merger; i.e. the abnormal matched firm

adjusted cash flow return on total assets. The coefficient (*b*) represents the fraction of the pre-merger performance which persists in the post-merger years. Results from the regressions are illustrated in Table 7.1 in the Appendix. However, an unknown form of heteroscedasticity was detected in most of the regressions and a *Heteroscedasticity Correction White Test* was applied on them. The heteroscedasticity corrected results are illustrated in Table 14.

The coefficient (*b*) in regression (1) is 0.118 and statistically insignificant denoting that pre-merger performance does not persist in the post-merger period. In other words, post-merger rate of matched firm adjusted cash flow returns on assets is not explained by pre-merger matched firm adjusted cash flow return on assets. The intercept coefficient (*a*) is -0.020 and statistically significant at a 10% significance level, indicating a decline in annual matched firm adjusted performance of 2%. This decline in performance is attributable to merger since any effects of pre-merger performance persistence in the post-merger period are controlled for. These results are in contrast to those provided by Healy et.al. (1992) for the U.S., who report an increase of 2.8% in annual post-merger performance.

TABLE 14 (Heteroscedasticity Corrected (White Test))

Healy's et.al. (1992) Regression Model. OLS regressions of post-takeover matched firm adjusted operating performance on combined target and bidder matched firm adjusted pre-takeover operating performance

EQUATION	1	2	3	4	5	6	7	8	9	10	11	12	13
INDEPENTEND VARIABLES	MAOP post	MAOP post	MAOP post	MAOP post	MAOP post	MAOP post	MAOP post	MAOP post	MAOP post	MAOP post	MAOP post	MAOP post	MAOP post
CONSTANT (a)	**-0.020***	**-0.011**	**-0.010**	**-0.057****	**-0.037****	**-0.028***	**-0.035****	**-0.035****	**-0.054***	**-0.014**	**-0.023***	**-0.034****	**-0.028****
t-stat	-1.903	-0.555	-0.822	-2.341	-2.055	-1.808	-2.297	-2.316	-1.710	-1.105	-1.962	-2.37	-2.374
MAOPpre	**0.1180**	**0.101**	**0.120**	**0.105**	**0.126**	**0.146**	**0.079**	**-0.068**	**0.084**	**0.098**	**0.113**	**0.0985**	**0.121**
t-stat	0.714	0.661	0.700	0.661	0.768	0.845	0.515	-0.326	0.558	0.583	0.669	0.576	0.710
STOCK		**0.003**							**0.024**				
t-stat		0.116							0.883				
MIX		**-0.016**							**-0.009**				
t-stat		-0.650							-0.411				
HOSTILE													
t-stat													
FRIENDLY			**-0.012**						**-0.010**				
t-stat			-.701						-0.484				
RLTD				**0.056****					**0.062****				
t-stat				2.191					2.318				
RLTDxnCASH					**0.035***								
t-stat					1.738								
RLTDxMIX						**0.022**							
t-stat						1.155							
LGxRLTD												**0.041****	
t-stat												2.208	
FRxRLTDxnCASH							**0.039****	**0.036***					
t-stat							2.092	1.952					
RELPREM 1										**-0.014**			
t-stat										-0.678			

LGacqn 1													
t-stat											**0.005**		
											0.252		
FR-REL-Ncash*MAOPpre													
t-stat								**0.423**					
								1.660					
WCMARA													**0.096****
t-stat													2.266
R SQ	**0.005**	**0.0161**	**0.009**	**0.097**	**0.045**	**0.019**	**0.050**	**0.066**	**0.122**	**0.011**	**0.006**	**0.054**	**0.036**
ADJ R sq	**-0.008**	**-0.027**	**-0.02**	**0.070**	**0.017**	**-0.009**	**0.022**	**0.024**	**0.054**	**-0.017**	**-0.023**	**0.026**	**-0.008**
F stat	**0.38**	**0.37**	**0.31**	**3.65**	**1.620**	**0.690**	**1.810**	**1.580**	**1.81**	**0.40**	**0.220**	**1.96**	**1.270**
Nr of Observations	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**

MAOPpost denotes the median annual matched firm adjusted cash flow returns for each combined firm in the five years after the year of the merger completion.
MAOPpre denotes the median annual matched firm adjusted cash flow returns for each combined firm in the five years prior to the year of the merger completion.

*** denotes significance at a 1% significance level using a two-tail test.
** denotes significance at a 5% significance level using a two-tail test.
* denotes significance at a 10% significance level using a two-tail test.

Variable *STOCK*: takes the value of 1 if the mode of payment is stock and 0 otherwise; variable *MIX*: takes the value of 1 if the method of payment is a combination of stock and cash and 0 otherwise; variable *LGXRLTD*: is the product of the dummy variable LG, which takes the value of 1 if the acquisition is large and 0 otherwise, and the dummy variable *RLTD* which takes the value of 1 if the acquiree and the acquirer operate in the same business line and 0 otherwise; variable *FRIENDLY*: it takes the value of 1 if the acquisition is friendly and 0 otherwise; variable *RLTDXnCash*: is the product of the dummy variable *RLTD* and the dummy variable nCash which takes the value of 1 if the transaction did not involve cash and 0 otherwise; variable RLTDXMIX: is the product of the variables RLTDand MIX; variable FRXRLTDXnCASH is the product of the variables *FRIENDLY, RLTD*, and *nCASH* and it takes the value of 1 If the acquisition is a Strategic one and 0 otherwise; variable *RELPREM*: takes the value of 1 if the acquiree was purchased at a premium and 0 otherwise (relative premium is defined as the value of the acquisition divided by the market value of equity of the acquiree as at the beginning of the year -1); variable *FRXRLTDXnCASHXMAOPpre*: is the product of the variables *FRIENDLY, RLTD, nCASH, MAOPpre*; variable *WCMARA*: is the weigthed average of the acquirer and the acquiree asset returns in the period of the event announcement.

In regression (2) the effects of the method of payment on post-merger performance are reported. There is not sufficient evidence to conclude that the mode of financing the acquisition has any impact on post-acquisition performance after controlling for the effects of the pre-merger performance (which are statistically insignificant). This is because the coefficients of the dummy variables (*STOCK*) and (*MIX*) are not statistically significant. The intercept coefficient (*a*) is also insignificant indicating that (*CASH*), which is the missing category, has no substantial impact on post-merger performance either. It is noteworthy, however, that stock financing has a positive impact on post-merger performance, which is consistent with results of the previous Chapter.

Whether an acquisition is a hostile or a friendly one seems to be irrelevant for the post-merger operating performance when the benchmark for adjusting performance is a pair of similar firms to bidder and target. The effects of target firm's management attitude towards the acquisition bid are illustrated in regression 3. Controlling for pre-merger performance (which has an insignificant effect on post-merger performance) both the intercept coefficient and the coefficient of the dummy variable (*FRIENDLY*) are insignificant.

There is a statistically significant increase of 5.6% in annual matched firm adjusted operating performance in the post-merger period when the acquirer and the target belong to the same Level 5 Industrial Sector. This finding is shown in regression (4). The coefficient of the dummy variable (*RLTD*) is 0.056 and statistically significant at a 5% significance level. The intercept coefficient (*a*) is -0.057 and statistically significant at a 5% significance level denoting that diversification leads to performance decline. This finding is consistent with that provided by Healy et.al. (op.cit.) and Powell and Stark (2005).

Regression (*5*) describes the effects on post-merger performance when the target and the bidder belong to the same Level 5 Industrial Sector and the method of financing the acquisition is stock or a combination stock and cash. The coefficient of the dummy (*RLTDxnCASH*) is 0.035 and statistically significant at a 10% significance level, indicating an increase of 3.5% in annual post merger performance after controlling for any persistence of the pre-merger performance in the post-merger period (which are statistically insignificant). The intercept coefficient is -

0.037 and statistically significant at a 5% significance level denoting that all other acquisitions experience a decline in the post-merger annual performance of 5.7%.

Acquisitions where the bidder and the target belonged to the same Level 5 Industrial Sector and the method of financing was a combination of stock and cash perform better than the average sample acquisition. In regression (*6*) the coefficient of the dummy variable (*RLTDxMIX*) is positive but statistically insignificant while the intercept coefficient is a negative of -0.028 which is statistically significant at a 10% significance level, indicating a decline in annual performance of 2.8% for acquisitions which are unrelated and there was not offered a choice in the payment method.

Strategic acquisitions exhibit an improvement of 3.9% in annual performance after controlling for the pre-merger performance effects. In regression (*7*), the coefficient of the dummy variable (*FRxRLDTxnCASH*) is 0.039 and statistically significant at a 5% significance level. The intercept coefficient which denotes the performance effect of the merger for all the other acquisitions in the sample is a negative of -0.035 which is significant at a 5% significance level. Thus while strategic acquisitions exhibit an improvement of 3.9% median annual performance, in non strategic acquisitions the decline in annual performance is 3.5%. When an additional variable is included in the regression (*8*) to capture the combined effect of the pre-merger performance and that of the strategic acquisitions' performance (i.e. the *FRxRLTDxnCASHxMAOPpre*), its coefficient of the variable (*FRxRLTDxnCASHxMAOPpre*) is positive but statistically insignificant (p-value 0.101).

When the combined effects of the mode of payment and the industry relatedness and the target's management attitude on post-merger performance are examined (regression (*9*)), only industry relatedness seems to have a significant impact. Indeed, after controlling for the effects of the financing method and the target's firm attitude towards the offer, the coefficient of the dummy variable (*RLTD*) is 0.062 and statistically significant at a 5% significance level.

Regression (*10*) indicates that whether the acquirer paid a relatively high premium for the target does not explain much of the variation of the post-merger performance. The coefficient of the respective dummy is negative but it is

statistically insignificant. Similarly, the intercept coefficient is negative and statistically insignificant (-0.014). Regression (*11*) indicates that large acquisitions perform better than all other acquisitions in the sample. The coefficient of the variable (*LGacqn*) is positive but statistically insignificant. The intercept coefficient is a negative of -0.023 and statistically significant at a 10% significance level, indicating that all other acquisitions in the sample experience decline in annual operating performance of 2.3%. Large acquisitions between firms with similar operations experience a statistically significant post-merger performance improvement of 4.1% (regression 12)

Regression (*13*) results from regression (*4.10*) by including the independent variable (WCMARA), where (*WCMARA*) is the combined cumulative abnormal market adjusted asset returns to the acquiree and acquirer firms measured around the takeover announcement. If markets are efficient then there should be a positive and statistically significant relationship between the post-merger operating performance and the market reaction to the announcement of the merger. In other words, if markets are informationally efficient, then they can predict the future changes in performance of the merging firms. Abnormal returns in principle capture the market's perceptions for future changes in operating performance due to merger. The results from regression (*13*) indicate that there a positive and statistically significant relationship between post-merger operating performance and abnormal asset returns. The implications of regression (13) will be analytically discussed in Chapter (9).

In Table 14a we include regression equations with both linear and non-linear terms. Coefficients are statistically insignificant in all regressions except for regression 5 where related acquisitions seem to experience an increase in post-merger performance.[31]

[31] No multicollinearity was detected after testing with tolerance, eigenvalues, condition index, and variance inflation factor.

TABLE 14a (heteroscedasticity corrected (White))

Healy's et.al. (1992) Regression Model. OLS regressions of post-takeover matched firm adjusted operating performance on combined target and bidder matched firm adjusted pre-takeover operating performance

EQUATION	1	2	3	4	5
INDEPENTEND VARIABLES	**MAOP post**	**MAOP post**	**MAOP post**	**MAOP post**	**MAOP post**
CONSTANT (a)	**-0.068**	**-0.038**	**-0.047****	**-0.007**	**-0.043**
t-stat	-1.132	-1.423	-2.139	-0.178	-1.423
MAOPpre	**0.102**	**0.105**	**0.110**	**0.0647**	**-0.045**
t-stat	0.641	0.630	0.656	0.392	-0.19
MIX		**-0.386**			
t-stat		-0.774			
LG			**-0.203**		
t-stat			-0.409		
nCASH	**0.0127**			**-0.027**	**-0.004**
t-stat	0.192			-0.816	-0.188
LGxRELTD					
t-stat					
FRIENDLY				**-0.033**	**-0.0126**
t-stat				-1.151	-0.632
RLTD	**0.0715**	**0.045**	**0.038**	**0.0259**	**0.053***
t-stat	1.126	1.46	1.505	0.854	2.106
RLTDxnCASH	**-0.017**				
t-stat	-0.252				
RLTDxMIX		**0.024**			
t-stat		0.451			
FRxRLTDxnCASH				**0.046**	
t-stat				1.276	
FR-REL-Ncash*MAOPpre					**0.434**
t-stat					1.55
R SQ	**0.098**	**0.116**	**0.106**	**0.116**	**0.115**
ADJ R sq	**0.043**	**0.063**	**0.052**	**0.048**	**0.047**
F stat	**1.8**	**2.18**	**1.97**	**1.71**	**1.7**
Nr of Observations	**71**	**71**	**71**	**71**	**71**

MAOPpost denotes the median annual matched firm adjusted cash flow returns for each combined firm in the five years after the year of the merger completion.
MAOPpre denotes the median annual matched firm adjusted cash flow returns for each combined firm in the five years prior to the year of the merger completion.

*** denotes significance at a 1% significance level using a two-tail test.
** denotes significance at a 5% significance level using a two-tail test.
* denotes significance at a 10% significance level using a two-tail test.
For the definition of the dummy above variables see Table 14, Chapter 7.

7.8. The Change Model.

When restricting (*b*) in regression (4.10) to equal 1 the benchmark for measuring post-merger performance is pre-merger performance. This is the *Change Model* as described and analysed in Chapter 4. The variables that denote the changes in median matched firm adjusted operating cash flow returns on total assets between different time periods around merger completion are *MAOPch5*, *MAOPch3*, *MAOPch2* and *MAOPch23*. The first refers to a time period that includes the five post and the five pre-merger years. That is the second refers to a 3-year time period around merger completion, the third refers to 2-year time period around merger completion and *MAOPch23* denotes the change in median matched firm adjusted operating performance between the years 2 and 3 and the year -1[32]. Dummy variables are as in Table 14.

Results from the regressions are illustrated in Table 7.2 in Appendix. However, because an unknown form of heteroscedasticity was detected, a Heteroscedasticity Correction White Test was applied and the correct results are illustrated in Table 15.

Results from regression[33] (1) indicate that the method of payment does not have a significant effect on post-merger performance. The coefficient of the dummy variable (*STOCK*) is positive denoting a positive effect on post-merger performance when the acquisition is financed by stock. However this is not statistically significant. Acquisitions that are financed by a combination of stock and cash seem to experience a decline in annual performance of 0.1%, which, however, is not statistically significant. An insignificant decline is also experienced by merging firms that are financed by cash. These results are consistent with those illustrated in Table 14 where Healy's Regression Model was employed. They are not consistent, however, with the results produced when the benchmark for measuring adjusted performance was firms in the same industry as in the previous Chapter. Regression (2) confirms previous results produced in this study, i.e. related acquisitions increase

[32] In all the cases the year of merger completion is excluded from the time periods in examination.
[33] We use the regression 'through the origin' for estimating the effects of the method of payment on post-merger performance without including an intercept to make our results comparable with those produced by Ghosh.

operating performance. The coefficient of the respective dummy variable is 0.08 and statistically significant at a 10% significance level denoting an increase in annual performance by 8% for acquisitions where the target and the bidder belong to the same Level 5 Industrial Sector. The intercept coefficient is -0.06 and statistically significant at a 5% significance level indicating a 6% decline in annual performance for unrelated acquisitions[34].

[34] Similar results are produced when the dependent variable is *MAOPch2*. When *MAOPch3* is the dependent variable results are statistically weak which is reasonable since the highest decline or the lowest increase in performance is observed during the years 2 and 3.

TABLE 15

Ghosh's (2001) Change Model. OLS regressions of the change in median annual matched firm adjusted operating performance of the combined firm between post- and pre- merger periods on dummy variables that describe certain merger characteristics.

EQUAT.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
INDEPEN. VAR	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**MAOP**	**WCMA**
CONST	**ch3**	**ch5**	**ch23**	**ch5**	**ch23**	**ch3**	**ch3**	**ch3**	**ch2**	**ch5**	**ch3**	**ch5**	**ch23**	**ch2**	**ch23**	**ch5**	**ch23**	**RA**
	-0.019	**-0.06** *	**-0.015**	**-0.021**	**-0.059** **	**-0.046** **	**-0.038** **	**-0.038** **	**-0.049** **	**-0.034** *	**-0.071** *	**-0.049**	**-0.028**	**-0.018**		**-0.033** *	**-0.063** *	**0.093** ***
t-stat	-0.900	-2.048	-1.017	-1.624	-2.515	-2.075	-2.006	-2.078	-2.333	-1.926	-1.708	-0.756	-1.187	-1.399		-1.739	-1.825	**4.552**
STOCK	**0.010**												**0.064**	**0.057**				
t-stat	0.306												1.530	1.559				
MIX	-0.011																	
t-stat	-0.375																	
nCASH											**0.006**	**0.002**						
t-stat											0.268	0.069						
FRIENDLY											**0.000**	**-0.016**	**0.002**					
t-stat											0.027	-0.375	0.066					
RLTD		**0.054***									**0.063***	**0.052**						
t-stat		1.773									1.963	1.252						
RLTDxnCASH						**0.046***												
t-stat						1.845												
RLTDxMIX							**0.039***											
t-stat							1.728											
UNRELATED													**-0.078**	**-0.079****				
t-stat													-1.626	-2.049				
FRxRLTDxnCASH								**0.039***	**0.047***	**0.027**		**0.003**						
t-stat								1.678	1.748	1.252		0.079						
REL PREM 1			**-0.007**															
t-stat			-1.542															

LGacqn 1				**-0.004**														
t-stat				-0.181														
LGxRLTD					0.062**													
t-stat					**2.013**													
ACQTIONS_1990-93															**-0.018**	**0.016**	**0.046**	
t-stat															-1.298	0.656	1.219	
ACQTIONS_1994-96															**-0.064***			
t-stat															-1.825			
MAOPch5																		**0.254**
t-stat																		1.548
R SQ	**0.007**	**0.064**	**0.046**	**.0004**	**0.042**	**0.045**	**0.030**	**0.031**	**0.033**	**0.017**	**0.074**	**0.068**	**0.078**	**0.102**	**0.024**	**0.006**	**0.024**	**0.025**
ADJ R sq	**-0.023**	**0.051**	**0.032**	**-0.014**	**0.028**	**0.031**	**0.017**	**0.017**	**0.019**	**0.002**	**0.032**	**0.011**	**0.036**	**0.076**	**0.010**	**-0.008**	**0.010**	**0.011**
F stat	**0.23**	**4.730**	**3.34**	**.030**	**3.01**	**3.250**	**2.190**	**2.22**	**2.390**	**1.180**	**1.79**	**1.210**	**1.880**	**3.880**	**1.71**	**.430**	**1.710**	**1.8**
Nr of Observat.	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**	**71**

MAOPch5 denotes the median change in matched firm adjusted operating performance between the 5-year post- and the 5-year pre-merger periods.
MAOPch3 denotes the median change in matched firm adjusted operating performance between the 3-year post- and the 3- year pre-merger periods.
MAOPch2 denotes the median change in matched firm adjusted operating performance between the 2-year post- and the 2-year pre-merger periods.
MAOPch23 denotes the median change in matched firm adjusted operating performance between the years 2 and 3 and the year -1.
*** denotes significance at a 1% significance level using a two-tail test.
** denotes significance at a 5% significance level using a two-tail test.
* denotes significance at a 10% significance level using a two-tail test.
For the definition of the above dummy variables see Table 14, Chapter 7.

In regression (*3*) the results indicate that whether acquirers paid a relatively high premium for the targets or not does not have any significant effect on the post-takeover performance. In regression (*4*) the coefficient of the dummy variable *LRGacqn* is negative but statistically insignificant. Therefore, whether the acquisition is large or not has no impact on the post-merger performance.

When the target and the bidder belong to the same Level 5 Industrial Sector and the acquisition is financed by a means other than cash, annual post-merger performance increases by a rate of 4.6%. This is shown in regression (6) where the coefficient of the respective dummy variable is 0.046 and statistically significant at a 10% significance level[35]. The intercept coefficient is -0.046 and statistically significant at a 5% significance level denoting a 4.6% decline in annual operating performance for the rest of the acquisitions in the sample.

Results from regression (7) indicate that when the means of payment is a combination of stock and cash and the bidder and the target belong to the same Level 5 Industrial Sector annual post merger performance increases by a rate of 3.9%. The coefficient of the dummy variable *RLTDxMIX* is 0.039 and statistically significant at a 10% significance level. The intercept coefficient is -0.038 indicating a decline in post-merger annual performance of 3.8% for all the other mergers in the sample.

Strategic acquisitions exhibit an annual post-acquisition performance which increases by 3.9%. In regression (8) the coefficient of the respective dummy variable is 0.039 and statistically significant at a 10% significance level. Non strategic acquisitions exhibit a post-merger decline of 3.8% in annual performance since the intercept coefficient is 0.038 and statistically significant at a 5% significance level. In regression (*9*), where the median change in matched firm adjusted operating performance is measured for 2 year post- and 2 year pre-merger time periods, strategic acquisitions exhibit a median performance change of 4.7% which is statistically significant at a 10% significance level. However, when the median change in performance is measured between the 5-year post- and the 5-year pre-merger periods strategic acquisitions exhibit a median performance change which is statistically insignificant (regression 10).

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[35] When *MAOPch5* is the dependent variable results are statistically week. Similar results are produced when *MAOPch2* or *MAOPch23* are the dependent variables.

In Regression (*11*) the MAOPch3 is regressed against the dummy variables *nCASH, FRIENDLY* and *RLTD*. Related acquisitions are followed by a 6.3% improvement in annual performance after controlling for the effects of friendly and non-cash acquisitions. The coefficient of the dummy variable *RLTD* is 0.063 and statistically significant at a 10% significance level. The coefficients of the dummy variables *nCash* and *FRIENDLY* are insignificant, indicating a negligible effect. The intercept coefficient is -0.071 and statistically significant at a 10% significant level and it captures the effect on the 3-year performance change of all the other acquisitions in the sample. Regression (*12*) results from regression (*11*) after including the dummy variable *FRxRLTDxnCASH*. After controlling for the effect of strategic acquisitions none of the coefficients are statistically significant. Strategic acquisitions have a positive effect on the 5-year adjusted performance change but it is statistically insignificant since the coefficient of the variable *FRxRLTDxnCASH* is positive but statistically insignificant.

Regression (13) indicates that stock acquisitions experience a positive change in performance which, however, is statistically insignificant after controlling for the effects of friendly and unrelated acquisitions. The coefficient of the variables (*FRIENDLY*) and (*UNRELATED*) are also statistically insignificant. Regression (*14*) examines the effects of payment method after controlling for the effects of unrelated acquisitions. The change in median matched firm adjusted operating cash flow return on total assets between the 2-year post- and the 2-year pre-merger periods is positive but statistically insignificant. Unrelated acquisitions experience, as expected, a decline of 7.9% in annual performance which is statistically significant at a 5% significance level. After controlling for the effect of unrelated acquisitions the intercept coefficient is negative but statistically insignificant.

Regressions (*15*), (*16*) and (*17*) examine the time effect of the results produced for the sample of the 71 acquisitions. The sample is segmented into two subsamples; one that includes acquisitions that occurred within the period from the beginning of 1990 until the end of 1993, so as to include part of the sample that was used by Powell and Stark (2005) and one that includes acquisitions that occurred in the period from the beginning of 1994 until the end of 1996. After running the regression through the origin (*15*) it is observed that acquisitions which occurred

during 1994-1996 experienced a decline in annual operating performance of 6.4% which is statistically significant, while acquisitions that occurred from 1990 to 1993 exhibit an indistinguishable from zero performance decline. Thus, the median change in the matched firm adjusted performance between the years 2 and 3 and the year -1 (which is represented by the dependent variable *MAOPch23*) is negative and refers to the acquisitions that occurred after 1993. These results are strengthened by the evidence which is produced from regression (*16*). Using as dependent variable the median change in matched firm adjusted operating cash flow return on assets between the 5-year post- and the 5-year pre-merger periods, acquisitions that occurred during the period 1990-1993 (that represented in the regression by the dummy variable *ACQTIONS-1990-193*) are followed by an increase of 1.6% in annual performance (which however is statistically insignificant). The intercept coefficient on the other hand that represent the effect on performance of the remaining acquisitions, i.e. acquisitions that occurred after 1993 and until the end of 1996, is negative (-0.033) and statistically significant at a 10% significance level. Results that are produced from regression (*17*) where the dependent variable represents the change in performance between the years 2 and 3 and the year -1, are similar.

Regression (*18*) examines the relation between the combined cumulative market adjusted abnormal asset returns to the acquirer and the target and the median change in matched firm adjusted operating cash flow return on assets between the 5 post-merger years and the 5 pre-merger years. This relation is positive but statistically insignificant. The implications of regression 18 are analytically discussed in Chapter 9.

Table 15a illustrates regression equations with both linear and non-linear terms. There are no statistically significant coefficients[36].

[36] All the appropriate multicollinearity tests were implemented; tolerance, eigenvalues, condition index, and variance inflation factor. No multicollinearity was detected.

TABLE 15a (heteroscedasticity corrected (White))

Ghosh's (2001) Change Model. OLS regressions of the change in median annual matched firm adjusted operating performance of the combined firm between post- and pre- merger periods on dummy variables that describe certain merger characteristics.

EQUATION	1	2	3	4
INDEPENTEND VARIABLES	MAOP ch3	MAOP ch3	MAOP ch3	MAOP ch23
CONSTANT (a)	-0.632	-0.027	-0.062	-0.053
t-stat	-0.979	-0.746	-0.924	-2.248
MIX		-0.075		
t-stat		-1.257		
LG				-0.055
t-stat				-0.676
nCASH	-0.001		0.001	
t-stat	-0.024		0.032	
LGxRELTD				0.0952
t-stat				1.096
FRIENDLY			-0.004	
t-stat			-0.086	
RELATED	0.054	.0.20	0.0572	0.016
t-stat	-0.797	0.509	1.331	0.523
RLTDxnCASH	0.011			
t-stat	0.143			
RLTDxMIX		0.083		
t-stat		1.306		
FRxRLTDxnCASH			0.009	
t-stat			0.194	
R SQ	0.074	0.114	0.074	0.068
ADJ R sq	0.033	0.074	0.018	0.027
F stat	1.79	2.89	1.33	1.65
Nr of Observations	71	71	71	71

For the definition of the above dummy variables see Table 14, Chapter 7.

MAOPch3 denotes the median change in matched firm adjusted operating performance between the 3-year post- and the 3- year pre-merger periods.
MAOPch23 denotes the median change in matched firm adjusted operating performance between the years 2 and 3 and the year -1.
*** denotes significance at a 1% significance level using a two-tail test.
** denotes significance at a 5% significance level using a two-tail test.
* denotes significance at a 10% significance level using a two-tail test.

7.9. Conclusions

In this Chapter, we used both Healy's et.al. (1992) Regression Model and Ghosh's (2001) Change Model to estimate changes in the adjusted operating performance of merging firms in the post-takeover period. The benchmark for the performance adjustment was a pair of matched firms for each target and bidder. Matching was made on the basis of industry relatedness, pre-merger performance and size.

We found that merging firms exhibit a statistically significant decline in their post-merger median annual performance of 2% after controlling for the effects pre-merger performance. Pre-merger performance appears to have no significant effect on post-merger performance. This is consistent with the evidence provided in the previous Chapter. The median change in matched firm adjusted operating performance between the years 2 and 3 and the year -1 was also found negative and statistically significant.

Strategic acquisitions and acquisitions within the same Level 5 Industrial Sector exhibit performance improvements in the post-merger years which possibly reflect the presence of synergies and the exploitation of cost economies. Large acquisitions perform better in comparison to all other acquisitions, and large acquisitions between firms within the same Level 5 Industrial Sectors exhibit significant performance improvements in the post-merger years.

The method of payment seems not to explain much of the variation of the post-takeover performance. However, for our sample companies stock acquisitions outperform acquisitions that were financed solely by cash or by a combination of stock and cash.

Hostile acquisitions underperform friendly ones while whether the acquirer paid a relatively high premium for the acquiree does not seem to have any significant effect on post-merger performance.

We found that early acquisitions in our sample (i.e. the ones completed between 1990-1993) tend to perform better than late acquisitions (1994-1996). This

might explain some of the differences in results between this study and previous studies. Finally, cumulative market adjusted abnormal asset returns in the period of the event announcement and the cash flow returns on assets are positively correlated but the relation is not statistically significant. This finding will be analytically discussed in Chapter 9.

CHAPTER 8.

THE EFFECTS OF MERGERS ON EMPLOYMENT.

8.1. Introduction.

This study so far has focused on the effects of M&As on the productivity of assets which in turn directly affects the firm's owners. While other stakeholders of the firm like the government, society, suppliers and clients are all affected by a merger decision, it was considered necessary for a thorough examination of the effects of M&As to consider their impact on arguably the second, most important group of stakeholders after the owners, namely the employees. The purpose of this Chapter is to provide an analysis of the effects of M&As on employment in the U.K.

As described in the methodology Chapter, two measures for examining the impact of M&As on employment were adopted. The first is the number of employees working in the firm for each financial year before and after the merger completion for a 5-year period. This number was deflated by the annual sales of the firm so as to obtain a metric which can be compared across firms; namely the number of employees per thousand pounds of sales. However, robust inferences about the capability of the united entity to increase efficiency cannot be made merely from this metric. This is because the popular view in the press and in academia that downsizing is an indication of more efficient use of labour resources does not necessarily hold unless it is accompanied by labour cost savings. By the same token, if acquisitions lead to an increase of the workforce this is not an undeniable indication of lower levels of efficiency or management indifference about achieving a more flexible organisational structure that is based on cost savings through the elimination of unnecessary and overlapping jobs. Mergers are often motivated by the desire of expansion to new markets and new products which may require new expertise and additional workforce. Thus, it is not only the size of the workforce that matters but also the costs associated with that workforce. Therefore, the second

metric that was adopted for examining the impact of M&As on employment was the labour costs per sales.

The former metric provides for an examination of the impact of takeover activity on the creation or the elimination of jobs. The latter indicates the degree to which the united entity manages efficiently operating costs that are associated with labour resources. Examining the effects of different types of M&As on the number of employees and the labour costs of the firm, along with the implications so far of the performance results, allows for interesting inferences to be drawn about the effectiveness and the desirability of different types of M&As.

The examination of the effects of mergers on employment is conducted through two alternative approaches; a univariate approach and a multivariate approach. In the univariate analysis the outcome of the research was based on a comparison of the respective variables between the sample firms and the benchmark firms for each pre- and post-merger year and for the entire pre- and post-merger periods. As discussed in Chapter 5, the point of reference for any change in employment rates and in employment costs in the pre- and the post merger years is the median value of the respective variables of the control firms for each year and for each period in examination. As control firms we used all the firms within all Level 5 Industrial Sectors in the Stock Exchange Year Book for which data were available in Datastream.

The median employee number per thousand pounds of sales and the median labour costs per thousand pounds of sales for each year were benchmarked by subtracting from each combined firm's values for each year the median value of the number of employees per thousand pounds of sales and the labour costs per sales of all the other firms from all Industrial Sectors in the Stock Exchange Year Book for which data were available, so as to obtain figures of the respective variables that are independent of factors that are unrelated to the merger and may have affected employment rates and costs.

In the multivariate analysis we used the change of the median benchmark adjusted number of employees per thousand pounds of sales and the labour costs per sales between the three post- and the three pre-merger years as a point of reference so as to judge the effects of M&As on employment. The benchmark used here was a

pair of firms matched for each target and bidder on the basis of industry relatedness, pre-merger performance and size. The adoption of this benchmark makes the results directly comparable with those derived by Ghosh (op.cit.).

The structure of this Chapter is as follows: first a discussion of the existing literature on the subject and the possible predictions about the employment consequences of acquisition activity are explained. Second, the results of this research for the entire sample are discussed. Third, different types of takeovers and their effects on employment are considered, and finally a series of regressions for measuring the effects of M&As on employment after controlling for other variables that are related to acquisition are estimated and discussed.

8.2. The Impact of Mergers on Employment.

Despite the extensive literature on the topic of M&As there is very little systematic empirical evidence on the employment effects of mergers. This evidence is even less outside the U.S.

There is a widespread perception that M&As are often motivated and frequently lead to substantial workforce reductions. The merged firms may attempt to economise on variable costs by reducing labour costs through a more efficient use of the combined resources. On the other hand, as Shleifer and Summers (1988) suggest, merger activity and the change of control that is associated with it often offers the opportunity for the renegotiation of implicit or explicit labour contracts within the firm. This in turn leads to a 'breach of trust' with employees, which may impose efficiency losses due to the loss of firm-specific human capital and the reduced incentives on behalf of employees to work efficiently. Therefore, cost savings from a more efficient use of labour resources should be seen in relation to the possible efficiency losses which are associated with the control change that often follows merger activity.

It is, therefore, plausible to assume that if merger activity leads to a decrease in the number of jobs and if this decrease is a manifestation of a reneging of labour contacts, then there should be costs associated with the reluctance of employees to

invest their firm-specific human capital in the firm. These costs will be reflected in an increasing expenditure by the firm in financing its workforce through time.

It is also reasonable to expect that in related acquisitions there should be observed a higher level of job cutting and labour cost savings since firms that operate in the same markets can more easily benefit from abandoning overlapping operations and a more efficient utilisation of their workforce than firms that operate in unrelated markets. Moreover, as Conyon et.al. (2002) argue, if unrelated acquisitions are primarily motivated by a managerial desire to just diversify earnings or a reluctance to return free cash flow to shareholders then there should not be a presumption of job losses.

On the other hand, if acquisitions are primarily motivated by a managerial desire to increase the labour efficiency of the target and to more productively employ the target's resources then one can expect cost economies and savings in labour costs to follow. This assumption must hold especially in hostile acquisitions, where the market for corporate control operates as a disciplinary mechanism for managers, and acquisitions are assumed to be an instrument for diverting resources to more talented or diligent management teams. After a hostile acquisition, the new management team has not yet developed the necessary ties with existing employees and the ongoing activities so as to honour the implicit labour contracts that have been shaped with the previous management. Moreover, in any confrontation with employees the new management would appear to pose a credible threat, especially when the transaction is made by using debt (as is typically the case in most hostile acquisitions) where the threat of bankruptcy is greater. Therefore, it is expected that hostile acquisitions lead to more employment losses than friendly ones. However, the degree to which the possible job elimination after a hostile acquisition is accompanied by an increase in efficiency depends on the reason for this decrease in the number of employees. If a decrease in employment occurs because of an increase in efficiency by a competent management team which utilises labour in a more efficient way, then one should expect a reduction in labour costs. On the other hand, if an acquisition leads to a disruption of the ongoing operations and to a feeling of insecurity on behalf of the labour to such a degree that employees would be unwilling to invest their firm-specific knowledge in the firm, then in the mid-term labour costs should increase

since the firm will lose in efficiency and it will must pay higher compensations to attract talented and experienced employees.

In acquisitions where the acquirer paid a relatively high premium for the target one could expect that employment rates and employee costs in the post-merger years to be lower than those of the benchmark due to the realisation of the potential synergies in the utilisation of employees which presumably justify the premium that was paid[1]. To put it more simply, an acquirer would be willing to pay a higher price than that of the intrinsic value of the target only if they expect that there are potential synergies; in this case, then, it is more likely that employee utilisation synergies to exist and to be realised. This should be translated to a reduction in the number of employees and in employment costs after the merger. Similarly, in the absence of potential synergies in employee utilisation it is more likely that the deal would close at a discount

A recent empirical work on the topic for the U.K. is provided by Thompson and Haynes (1999). The authors examined mergers' efficiency by focusing on the demand for labour by acquiring firms after the merger. Using a sample of 93 U.K. building societies in the period from 1981 to 1993 and employing a standard labour demand equation – i.e. one that controls for real wage and output factors – augmented by acquisition variables, the authors attempted to capture the impact of long-run effects of mergers on firm employment. The results indicated that mergers increase efficiency in the sense that they were followed by a fall in the acquiring firm's demand for labour. The model indicated that immediately after the merger there is a statistically significant positive impact on an acquirer's demand for labour (after controlling for the output change) which, however, disappears and becomes a statistically significant negative effect in subsequent years as the acquisition is being absorbed.

Conyon et.al. (2002) examined the employment effects of mergers in the U.K., using a sample of 442 acquiring and acquired firms in the period from 1967 to 1996. The authors found that merger activity is followed by a substantial and statistically significant employment fall. It was also found that related and hostile

[1] A relatively high premium can be justified by a variety of potential synergies such as operational, financial, managerial, etc. However, it is more likely that firms that purchase a target at a premium expect and realise synergies in the utilisation of the workforce of the combined entity than firms that purchase a target at a discount.

merger activity is followed by large falls in labour demand which, having controlled for output changes, can be interpreted as being consistent with increased efficiency of labour utilisation. Substantial job losses for hostile acquisitions – especially among white-collar workers - are reported by Franks and Mayer (1996) for the U.K. and by Bhagat et.al. (1990) for the U.S. In contrast, McGuckin et.al. (1995) found that employment in acquired plants increased relatively to non-acquiring firms, while when firm-level data were used there were no significant effects on employment.

8.3. The Employment Effects of Mergers on Sample Companies.

In Table 1 the median annual number of employees is reported for every thousand pounds of sales. In Column 1 the annual firm median value is reported while in Column 2 the median of all listed firms for which data were available is illustrated.

The results from Column 1 indicate that there is a decline in the median number of employees in the united entity in relation to the number of employees of the combined target and bidder in the pre-merger years. In the entire pre-merger period the median number of employees per thousand pounds of sales is 1.61% which falls to 1.19% in the 5-year post-merger period.

The median of the benchmark-adjusted number of employees per thousand pounds of sales, as is shown in Column 3, also falls from a statistically insignificant value of -0.02% in the entire pre-merger period to a significant value at a 5% significance level of -0.07% in the post-merger years. The number of positive observations for the same periods also falls from 48.87% to 43.09%. Therefore, in the pre-merger years the combined target and bidder seem to employ the same number of employees for each thousand pounds of sales as that of the control firms. None of the differences between merging firms' medians and control firms' medians is statistically different from zero in each of the pre-merger years. In the post-merger years, however, there is a gradual decline in the adjusted number of employees.

TABLE 1

Number of Employees per £ '000 of Sales for the 79 sample companies.[2]

Pre and Post-Merger Number of Employees per £ 000 Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		Benchmark - Adjusted % postitive	Number of observations
-5	1.79%	1.91%	-0.11%		45.95%	37
-4	1.77%	1.80%	0.04%		54.05%	37
-3	1.68%	1.71%	0.02%		50.63%	79
-2	1.54%	1.67%	-0.05%		48.10%	79
-1	1.46%	1.54%	0.00%		46.84%	79
Median Annual Nr of Employees per Sales for years -5 to -1	1.61%	1.71%	-0.02%		48.87%	311
1	1.29%	1.34%	-0.03%		44.30%	79
2	1.24%	1.28%	-0.04%		46.84%	79
3	1.18%	1.26%	-0.06%		44.30%	79
4	1.06%	1.22%	-0.20%	**c**	37.84%	37
5	0.99%	1.19%	-0.23%	**b**	35.14%	37
Median Annual Number of Employees per Sales for years 1 to 5	1.19%	1.26%	-0.07%	**b**	43.09%	311

Δ (NE per '000 Sales)[3] Years -1, -2, -3 , Years1, 2, 3 0.042%

b - Significant at the 5% significance level using a two-tailed Wilcoxon test.

c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

The median control firms' adjusted number of employees per thousand pounds of sales is a statistically insignificant -0.03% in the first post-merger year which becomes an insignificant -0.04% in the second year, and an insignificant -0.06 in the third year. In the fourth and the fifth post-merger years the decline is even sharper; the adjusted number of employees per sales in year 4 is -0.20% which is statistically significant at a 10% significance level and -0.23 %, statistically

[2] The number of employees is reported for every thousand pounds of sales at the end of each financial year. Pro-forma data of merged firms for pre-merger years are created by aggregating acquiring and target firms' data. Benchmark adjusted Number of Employees per thousand pounds of Sales are calculated by subtracting from each firm's value for each year the median value of the respective variable of all the other firms from all Industrial Sectors in the Stock Exchange Year Book for which data are available in DataStream and Companies house.

[3] **Δ (NE per '000 Sales)** is the median of the differences in median adjusted Number of Employees per '000 pounds of Sales between the post- and the pre-merger periods for all sample firms.

significant at a 5% significance level, in the year 5. The number of positive observations falls accordingly from 44.30% in the first post-merger year to 35.14% in the fifth year following the acquisition. The employment rate appears to fall in the years following the acquisition. This decline becomes more intense as time passes after the merger, and the acquisition is absorbed by the acquirer. This is an indication of a more efficient utilisation of labour by merged companies which increases after the third post-merger year. However, the median change of the adjusted number of employees per '000 pounds of sales between the post- and the pre-merger periods is statistically insignificant.

The results from Table 2 are supportive of this finding; for the sample companies, labour costs decrease in the post-merger period indicating greater efficiency (the change in labour cost per sales between the post- and the pre-merger periods is negative but statistically insignificant).

Although in each of the pre-merger years the median benchmark adjusted labour costs per sales are statistically indifferent from zero, in the entire pre-merger period the adjusted labour costs per sales are below control firms' standards by 1.21% which is statistically significant at 1% significance level. This finding indicates that the median merging firm is more efficient in labour expenditure than the median control firm. This finding implies that firms which are strategically oriented towards acquisitions and firms that are chosen to be targets enjoy efficiencies associated with lower employee costs in relation to non-acquiring and non-acquired firms[4].

In the post-merger years, the adjusted labour costs per sales decline further. In the entire post-merger period the benchmark adjusted labour costs are -2.44% and statistically significant at a 1% significance level. Positive observations decrease from 45.02% in the pre-merger period to 42.44% in the post-merger years. In year 1 the combined entity's adjusted labour costs are -2.83% which is statistically significance at a 10% significant level and the number of positive observations is 39.24%. It is apparent that in the first post-merger year the merged firms manage to shrink labour expenditure, while as indicated in Table 1, the number of employees does not decrease significantly.

[4] It must be noted, however, that this finding refers to the aggregate labour costs of both bidders and targets. It requires further research for the identification of whether the targets or the bidders are more labour cost efficient.

TABLE 2

Employee Costs per Sales for the 79 sample companies.[5]

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark – Adjusted Median		% postitive	Number of observations
-5	21.63%	21.68%	-0.33%		48.65%	37
-4	21.08%	21.68%	-0.46%		45.95%	37
-3	20.79%	22.56%	-2.56%		41.77%	79
-2	20.59%	23.76%	-1.09%		45.57%	79
-1	21.87%	23.33%	-1.57%		45.57%	79
Median Annual Employee Costs per Sales for years -5 to -1	21.00%	22.56%	-1.21%	**a**	45.02%	311
1	21.18%	23.76%	-2.83%	**c**	39.24%	79
2	22.88%	23.62%	-1.41%		44.30%	79
3	22.65%	23.76%	-1.40%		44.30%	79
4	18.94%	23.62%	-4.42%		43.24%	37
5	19.36%	23.62%	-4.72%		40.54%	37
Median Annual Employee Costs per Sales for years 1 to 5	21.32%	23.62%	-2.44%	**a**	42.44%	311
Δ (EC per Sales)[6] Years -1, -2, -3 , Years1, 2, 3					-0.231%	

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

This suggests that management may economise on labour costs by reneging the implicit or explicit terms of labour contracts. In years 2 and 3 the median labour costs are lower than those of the control firms, however they are not statistically

[5] Employee costs per Sales are the ratio of the total labour costs over sales at the end of each financial year. Pro-forms data of merged firms for pre-merger years are created by aggregating acquiring and target firms' data. Benchmark adjusted Employee Costs per Sales are calculated by subtracting from each firm's value for each year the median value of the respective variable of all the other firms from all Industrial Sectors in the Stock Exchange Year Book for which data are available in DataStream and the Companies house.

[6] **Δ (EC per Sales)** is the median of the difference in median Employee Costs per Sales between the post- and the pre-merger periods for all the sample firms.

significant and are apparently higher relative to the control group than those of the year 1. But in the years 4 and 5 and as the acquisition has been absorbed, labour costs – though statistically insignificant – are much lower than those of the control firms.

Overall, the number of employees per thousand pounds of sales declines after the merger and especially in the fourth and the fifth years. This indicates a higher degree of efficiency in labour utilisation by the combined entity in comparison to the target and the bidder when operated as separate firms.

Merging firms in the sample are more labour cost efficient than the control firms in the entire pre-merger period and remain efficient in the post-merger period. In the first year following the acquisition labour costs decline while the number of employees remains at the same standards as those of the control firms, a finding that supports the view that immediately after the merger there is a renegotiation of employment contracts on behalf of the management so as to reduce costs. Labour costs decline more in the year 4 and 5 for the sample companies, indicating a greater degree of efficiency as time passes and the acquisition is being absorbed, but this was not statistically significant so does not carry over to M&As in general. Thus, it could be argued that the median combined target and bidder in the sample enjoys labour cost efficiencies after the merger.

8.3.1. Employment effects on Hostile and Friendly acquisitions.

The results of this study for employment effects of hostile takeovers are illustrated in Table 3. Contrary to expectations, in the years following hostile acquisitions the median control firms adjusted number of employees per thousand pounds of sales are statistically indifferent from zero. This means that merging firms after a hostile acquisition keep the number of employees at the same level as that of the control firms. This may imply that hostile acquisitions do not lead to a more efficient utilisation of labour as was hypothesised to occur after transactions that are mainly justified by the intention to better utilise target's resources[7]. The results also do not appear to confirm Shleifer and Summers' (op.cit.) argument that takeovers that transfer wealth from stakeholders to shareholders must be hostile. This finding is

[7] Hostile acquisitions are typically justified by anticipated gains resulting from the utilisation of target's resources by a more competent management team or one which is more loyal to shareholder interests.

consistent with the hypothesis that after hostile acquisitions the acquirers focus mainly to the replacement of management teams and less to the reduction of the workforce though more research would be needed to confirm this.

TABLE 3

Median Annual Number of Employees per £ '000 of Sales for the 18 acquisitions where the acquirer made a hostile bid for the acquiree[8].

Pre and Post-Merger Number of Employees per £ 000 of Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median	Benchmark - Adjusted % postitive	Number of observations
-3	1.86%	1.91%	0.05%	61.11%	18
-2	1.68%	1.80%	0.06%	55.56%	18
-1	1.73%	1.71%	0.10%	55.56%	18
Median Annual Nr of Employees per K of Sales for years -5 to -1	1.74%	1.71%	0.06%	57.41%	54
1	1.56%	1.54%	0.01%	50.00%	18
2	1.48%	1.44%	0.11%	61.11%	18
3	1.27%	1.34%	-0.01%	50.00%	18
Median Annual Number of Employees per K of Sales for years 1 to 5	1.41%	1.34%	0.06%	53.70%	54
Δ (NE per '000 Sales)[9] Years -1, -2, -3 , Years1, 2, 3				-0.053%	

The results of Table 4 which looks at employee costs, support the findings that were shown in Table 3. Merging firms that are engaged in hostile transactions exhibit higher labour costs than the control firms, both in the pre- and the post-merger periods. In the entire pre-merger period the median adjusted labour cost per sales for the combined target and bidder is 2.28% and statistically significant at a 1% significance level. In the entire post-merger period the adjusted labour cost per sales

[8] See footnote 2.
[9] See footnote 3.

is 2.46% and statistically significant at a 1% significance level. It can be argued therefore, that sample companies that were engaged to hostile takeovers do not contribute to economising on labour costs; at the best case costs do not deteriorate[10]. On the contrary, the decline in positive observations between the two periods (from 70.37% to 62.96%) is an indication of some deterioration in labour costs expenditure.

The finding that firms that are engaged in hostile acquisitions have higher labour costs than control firms could possibly be explained by organisational culture. The typically bigger acquirer that bids for an inefficient target may be a firm that follows an aggressive expansionary policy and it may be oriented towards growth and not towards a policy that rationalises expenditure. The targeted firm may suffer inefficiencies and relatively high labour and other costs. Thus, the median combined target and bidder in hostile acquisitions exhibit labour costs that are higher than those of the control firms in the pre-merger period which they do not manage to improve in the years following the merger.

[10] To argue that hostile takeovers contribute to economising on labour costs there should be a statistically significant negative difference in employee costs between the post- and the pre-merger periods. However, as illustrated in section 8.9 of this Chapter where the change in employment costs is regressed against the dummy variable which takes the value of 1 when the acquisition is characterised as Friendly and the value of 0 when the acquisition is characterised as Hostile, the intercept coefficient is positive but statistically insignificant.

TABLE 4

Median Annual Employee Costs per Sales for the 18 acquisitions where the acquirer made a hostile bid for the acquiree[11].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		% postitive	Number of observations
-3	23.75%	21.57%	2.38%		61.11%	18
-2	24.77%	21.68%	2.03%	c	72.22%	18
-1	25.00%	22.56%	2.23%	b	77.78%	18
Median Annual Employee Costs per Sales for years -5 to -1	24.49%	22.56%	2.28%	a	70.37%	54
1	25.79%	24.03%	1.93%		55.56%	18
2	26.11%	24.20%	2.46%	b	72.22%	18
3	26.11%	23.76%	2.53%		61.11%	18
Median Annual Employee Costs per Sales for years 1 to 5	26.11%	23.76%	2.46%	a	62.96%	54

Δ (EC per Sales)[12] Years -1, -2, -3 , Years1, 2, 3 -0.286%

a - Significant at the 1% significance level using a two-tailed Wilcoxon test.
b - Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

In friendly acquisitions, however, the evidence is exactly the opposite. As can be seen in Table 5, while the combined targets and bidders that engaged in agreed transactions, exhibit employment rates at the same levels as that of the control firms (i.e. the median control firm adjusted number of employees per thousand pounds of sales is statistically insignificant) in the pre-merger years, in the entire post-merger period the adjusted number of employees per thousand pounds of sales is below the control group's standards by 0.11% which is statistically significant at a 5% significance level.

[11] See footnote 5.
[12] See footnote 6.

TABLE 5

Median Annual Number of Employees per £ '000 of Sales for the 61 acquisitions where the acquirer made an agreed offer to the acquiree[13].

Pre and Post-Merger Number of Employees per £ 000 of Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		% postitive	Number of observations
-5	1.61%	1.80%	-0.11%		44.44%	27
-4	1.55%	1.71%	-0.20%		48.15%	27
-3	1.60%	1.71%	-0.10%		47.54%	61
-2	1.46%	1.67%	-0.05%		45.90%	61
-1	1.35%	1.54%	-0.02%		44.26%	61
Median Annual Number of Employees per k of Sales for years -5 to -1	1.50%	1.67%	-0.06%		45.99%	237
1	1.26%	1.34%	-0.06%		42.62%	61
2	1.22%	1.28%	-0.07%		42.62%	61
3	1.12%	1.26%	-0.08%		42.62%	61
4	1.01%	1.19%	-0.22%	**c**	33.33%	27
5	0.81%	1.13%	-0.26%	**b**	37.04%	27
Median Annual Number of Employees per k of Sales for years 1 to 5	1.16%	1.26%	-0.11%	**b**	40.93%	237

Δ (NE per '000 Sales)[14] Years -1, -2, -3 , Years1, 2, 3 0.076%

b - Significant at the 5% significance level using a two-tailed Wilcoxon test.

c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

Moreover, employment rates decline sharply after the third post-merger year. While in the years 1, 2, and 3 the adjusted number of employees per thousand pounds of sales are -0.06, -0.07 and -0.08 (all statistically insignificant) respectively, and the number of positive observations 42.62% in each of these years, in year 4 the adjusted number of employees is -0.22% (significant at a 10% significance level) with the number of positive observations being 33.33%. A further decline is observed in the year 5; the adjusted number of employees per thousand pounds of sales falls to -0.26% which is statistically significant at a 5% significance level with the number of

[13] See footnote 2.
[14] See footnote 3.

positive observations being 37.04%. We must however be cautious of this last result because the number of observations falls from year 3 to years 4 and 5. This applies to several of the following tables as well.

TABLE 6

Median Annual Employee Costs per Sales for the 61 acquisitions where the acquirer made an agreed offer to the acquiree[15].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		% postitive	Number of observations
-5	18.24%	21.68%	-4.93%	**b**	40.74%	27
-4	17.99%	22.56%	-5.36%	**b**	37.04%	27
-3	19.73%	22.56%	-3.47%	**b**	36.07%	61
-2	18.81%	23.76%	-3.60%	**b**	37.70%	61
-1	20.02%	23.76%	-3.64%	**b**	36.07%	61
Median Annual Employee Costs per Sales for years -5 to -1	18.93%	23.33%	-3.89%	**a**	37.13%	237
1	19.57%	23.76%	-4.20%	**b**	34.43%	61
2	19.56%	23.62%	-4.83%	**c**	36.07%	61
3	19.45%	23.62%	-4.44%	**c**	39.34%	61
4	16.47%	23.62%	-7.19%	**b**	33.33%	27
5	17.32%	24.08%	-6.10%	**b**	29.63%	27
Median Annual Employee Costs per Sales for years 1 to 5	18.72%	23.62%	-4.91%	**a**	35.44%	237

Δ (EC per Sales)[16] Years -1, -2, -3 , Years1, 2, 3 -0.231%

a - Significant at the 1% significance level using a two-tailed Wilcoxon test.
b - Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

Our results concerning labour costs of firms that are engaged in friendly takeovers is also in contrast to the evidence concerning the hostile ones. As Table 6 shows, the median combined target and bidder enjoy adjusted labour costs per sales that are much lower than those of the control firms in all individual pre-merger years and in the entire pre-merger period. More importantly, all figures are statistically

[15] See footnote 5.
[16] See footnote 6.

significant. In the post-merger years the median combined entity also keeps labour expenditure below those of the control group. In the entire post merger period the median control firms adjusted labour costs per sales are -4.91% and statistically significant at a 1% significance level (for the pre-merger period the respective number is -3.89%, also significant at a 1% significance level). The number of positive observations falls from 37.13% in the pre-merger period to 35.44%in the post-merger period.

Overall the results indicate that friendly acquisitions lead to a more efficient utilisation of the workforce while labour costs expenditure remains below those of control group's standards both in the pre- and the post-merger period. This pattern is accelerated after the third post-merger year when the acquisition has been absorbed. In stark contrast to hostile takeovers, in friendly ones the typical combined target and bidder exhibit a greater capacity to keep employment costs under the typical control firm's standards in the pre-merger period. This evidence indicates that firms that are strategically oriented towards agreed acquisitions are more cost efficient at least as far as labour costs are concerned.

8.3.2 Employment effects of Related and Unrelated acquisitions.

In related acquisitions, as it was expected, there is a decline in employment rates in the post-merger years indicating that merged firms utilise their labour more efficiently. Table 7 shows that whilst in each of the pre-merger years the median control firm adjusted number of employees per thousand pounds of sales is close to zero, for the entire pre-merger period as a whole the adjusted number of employees per thousand pounds of sales is -0.14% and statistically significant at a 10% significance level. This indicates that targets and bidders that are engaged in related acquisitions enjoy greater labour costs efficiencies in comparison to non-acquiring and non-acquired firms.

In the post-merger years the decline in employment rates starts after the year 3. In the fourth post-merger year, the median adjusted number of employees per thousand pounds of sales is -0.27% and statistically significant at a 10% significance level. The proportion of positive observations is 36%. In the fifth post-merger year

the respective figures are -0.26% (which is statistically significant at a 10% significance level) and 32%. In the entire post-merger period the adjusted number of employees per thousand pounds of sales is decreased to -0.19% which is statistically significant at a 1% significance level. Positive observations fall to 37.86% (in comparison to 45.15% in the entire pre-merger period).

TABLE 7

Median Annual Number of Employees per £ '000 of Sales for the 52 acquisitions where the acquirer belonged to the same Level 5 Industrial Sector as that of the acquiree in the year before the takeover[17].

Pre and Post-Merger Number of Employees per £ 000 of Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark – Adjusted Median		% postitive	Number of observations
-5	1.56%	1.80%	-0.16%		40.00%	25
-4	1.47%	1.71%	-0.23%		44.00%	25
-3	1.57%	1.69%	-0.14%		48.08%	52
-2	1.44%	1.61%	-0.05%		46.15%	52
-1	1.33%	1.49%	-0.05%		44.23%	52
Median Annual Nr of Employees per K of Sales for years -5 to -1	1.42%	1.71%	-0.14%	c	45.15%	206
1	1.23%	1.31%	-0.18%		38.46%	52
2	1.13%	1.27%	-0.15%		40.38%	52
3	1.08%	1.24%	-0.12%		38.46%	52
4	0.87%	1.19%	-0.27%	c	36.00%	25
5	0.81%	1.13%	-0.26%	c	32.00%	25
Median Annual Number of Employees per K of Sales for years 1 to 5	1.06%	1.26%	-0.19%	a	37.86%	206

Δ (NE per '000 Sales)[18] Years -1, -2, -3 , Years1, 2, 3 0.095%

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.

c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[17] See footnote 2.

[18] See footnote 3.

As far as labour costs are concerned (Table 8), firms that are engaged in related acquisitions exhibit better expenditure rates in comparison to control firms. In each of the pre-merger years the adjusted labour costs are below the standards of the control firms and all the figures are statistically significant.

TABLE 8

Median Annual Employee Costs per Sales for the 52 acquisitions where the acquirer belonged to the same Level 5 Industrial Sector as that of the acquiree in the year before the takeover[19].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		% postitive	Number of observations
-5	18.56%	21.68%	-3.75%	**c**	40.00%	25
-4	18.13%	22.56%	-3.96%	**b**	36.00%	25
-3	19.10%	23.16%	-3.29%	**c**	36.54%	52
-2	19.72%	23.76%	-3.56%	**b**	38.46%	52
-1	20.24%	23.58%	-2.80%	**b**	40.38%	52
Median Annual Employee Costs per Sales for years -5 to -1	19.19%	22.56%	-3.50%	**a**	38.35%	206
1	19.88%	23.69%	-4.01%	**b**	30.77%	52
2	20.35%	23.62%	-3.95%	**b**	32.69%	52
3	20.16%	23.69%	-3.75%		36.54%	52
4	17.23%	23.62%	-6.39%	**c**	36.00%	25
5	17.32%	24.08%	-6.10%	**c**	36.00%	25
Median Annual Employee Costs per Sales for years 1 to 5	19.40%	23.62%	-4.58%	**a**	33.98%	206

Δ (EC per Sales)[20] Years -1, -2, -3 , Years1, 2, 3 -0.376%

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b - Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[19] See footnote 5.
[20] See footnote 6.

In the entire pre-merger period the control firm adjusted employee costs per sales are -3.50% and statistically significant at a 1% significance level. The number of positive observations is 38.35%.

The median adjusted employee costs per sales is also below control group's median in the post-merger years. In the year 1 they are -4.01% and statistically significant at a 5% significance level, in the year 2 they are -3.95% and statistically significant at a 5% significance level and in the year 3 they are -3.75% and statistically insignificant. In the years 4 and 5 the adjusted employee costs per sales decline further to -6.39% and -6.10%. Both figures are statistically significant at a 10% significance level. The number of positive observations in the entire post-merger period falls to 33.98% from 38.35% in the entire pre-merger period.

It is apparent from the results that related acquisitions lead to labour costs savings and a rationalisation in the way that employees are utilised. These effects are more obvious after the third post-acquisition year, possibly because such employee-utilisation and labour costs efficiencies need some time to appear. In horizontal mergers therefore, as was expected, the possible overlapping activities of the merging firms, the greater opportunity for scale economies, and the cross-utilisation of resources allow for efficiencies of workforce utilisation to be achieved. Firms that are engaged in related acquisitions employ fewer employees and enjoy less labour costs than the control firms in the pre-merger years. This finding may be related to the fact that most of the horizontal acquisitions in the sample are also friendly ones[21]. Thus, the possible reasons that explain the better pre-acquisition employee utilisation in friendly acquisitions may apply to the horizontal acquisitions. Therefore, it could be argued that firms that are strategically oriented towards agreed acquisitions within the same industrial sector manage to utilise their workforce more efficiently in the pre-merger years The individual effects of friendliness and strategic direction are explored later in this Chapter in the regression analyses.

Unrelated acquisitions in the sample exhibit exactly the opposite picture, as far as employment rates and costs are concerned, compared with those of the related ones. In Table 9 it can be seen than in each of the pre-merger years the median adjusted employees per thousand pounds of sales is statistically insignificant from

[21] 40 out of the 52 related acquisitions are friendly.

zero. In the entire pre-merger period, however, the median combined target and bidder employs 0.04% more number of employees per thousand pounds of sales than the control firms. In each of the post-merger years and in the entire post-merger period the median merged firm keeps employment rates at the same levels as those of the control firms.

TABLE 9

Median Annual Number of Employees per £ '000 Sales for the 27 acquisitions where the acquirers and acquirees belong to different Level 5 Industrial Sectors[22].

Pre and Post-Merger Number of Employees per £ 000 of Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark – Adjusted Median		% postitive	Number of observations
-5	2.00%	1.91%	0.05%		58.33%	12
-4	2.07%	1.80%	0.10%		75.00%	12
-3	1.75%	1.71%	0.03%		55.56%	27
-2	1.73%	1.67%	0.04%		51.85%	27
-1	1.69%	1.54%	0.02%		51.85%	27
Median Annual Nr of Employees per K of Sales for years -5 to -1	1.77%	1.71%	0.04%	**c**	56.19%	105
1	1.53%	1.34%	0.06%		55.56%	27
2	1.42%	1.28%	0.09%		59.26%	27
3	1.29%	1.26%	0.01%		55.56%	27
4	1.19%	1.22%	-0.02%		41.67%	12
5	1.14%	1.19%	-0.05%		41.67%	12
Median Annual Number of Employees per K of Sales for years 1 to 5	1.32%	1.28%	0.01%		53.33%	105

Δ (NE per '000 Sales)[23] Years -1, -2, -3 , Years1, 2, 3 -0.122%

In other words, the number of employees declines from above that of the control firms in the pre-merger period to the industry standards in the post-merger period. However, this is not enough so as to argue that unrelated acquisitions lead to employee utilisation efficiencies. Bearing in mind that many unrelated acquisitions are typically followed by the divestment of the unnecessary divisions and plants for a

[22] See footnote 2.
[23] See footnote 3.

variety of reasons, including the incentive for cash recovery after the acquisition or the rationalisation of operations (Weston et.al. (1998)), it cannot be argued that unrelated acquisitions lead to a more efficient utilisation of labour.

The same argument regarding unrelated acquisitions can be also applied to labour costs per sales. As presented in Table 10, the median control firm adjusted employee costs per sales for both the pre- and the post-merger years are statistically close to industry standards. Therefore, it can be said that unrelated acquisitions do not lead to increased efficiencies as far as employee costs are concerned, if they are compared to other non-acquiring and non-acquired firms.

TABLE 10

Median Annual Employee Costs per Sales for the 27 acquisitions where the acquirers and acquirees belong to different Level 5 Industrial Sectors[24].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median	Benchmark - Adjusted % postitive	Number of observations
-5	23.62%	21.54%	2.11%	66.67%	12
-4	23.10%	21.68%	1.48%	66.67%	12
-3	22.19%	22.56%	0.16%	51.85%	27
-2	23.64%	23.33%	0.38%	59.26%	27
-1	24.22%	23.33%	1.04%	55.56%	27
Median Annual Employee Costs per Sales for years -5 to -1	23.35%	22.56%	0.91%	58.10%	105
1	24.83%	23.76%	0.82%	55.56%	27
2	25.33%	23.76%	1.63%	66.67%	27
3	24.39%	23.76%	0.97%	59.26%	27
4	24.67%	23.36%	1.31%	58.33%	12
5	24.01%	23.62%	0.53%	50.00%	12
Median Annual Employee Costs per Sales for years 1 to 5	24.83%	23.76%	1.00%	59.05%	105
Δ (EC per Sales)[25] Years -1, -2, -3 , Years1, 2, 3				0.120%	

[24] See footnote 5.
[25] See footnote 6.

8.3.3. Employment Effects and the Method of Payment.

In this Section, the employment effects of acquisitions that were financed by alternative means of payment are examined. First, we examine the impact on employment rates and employee costs of acquisitions that were financed by cash, then the effects on employment rates and employee costs of acquisitions that were financed by stock, and finally of the acquisitions that were financed by a combination of stock and cash.

Acquisitions that were financed by cash are expected to offer a greater disciplinary motive to acquirer's management for job elimination and greater cost economies than acquisitions that were financed totally or partly by stock. This is because acquirers that use cash to finance an acquisition often use debt to raise the necessary funds for the transaction which may provide a greater motivation for management to economise on labour costs than if the means of payment was stock.

In Table 11 the median control firm adjusted number of employees per thousand pounds of sales of the combined targets and bidders that were engaged to cash acquisitions is shown. The results in Column 3 indicate that the median adjusted number of employees per thousand pounds of sales is statistically insignificant in each of the pre- and post-merger years and for the entire pre- and post-merger periods. Thus, the utilisation of the workforce in the pre- and the post-merger years is about at the same levels as those of the control firms.

TABLE 11

Median Annual Number of Employees per £ '000 of Sales for the 16 acquisitions where the method of payment was cash[26].

Pre and Post-Merger Number of Employees per £ 000 Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median	% postitive	Number of observations
-3	1.48%	1.69%	-0.04%	50.00%	16
-2	1.42%	1.61%	-0.17%	43.75%	16
-1	1.36%	1.49%	-0.07%	43.75%	16
Median Annual Nr of Employees per K of Sales for years -5 to -1	1.39%	1.61%	-0.07%	45.83%	48
1	1.18%	1.31%	-0.13%	43.75%	16
2	1.06%	1.27%	-0.18%	37.50%	16
3	1.11%	1.24%	-0.14%	37.50%	16
Median Annual Number of Employees per K of Sales for years 1 to 5	1.12%	1.27%	-0.15%	39.58%	48
Δ (NE per '000 Sales)[27]	Years -1, -2, -3 , Years1, 2, 3			0.090%	

As far as employee costs per sales in cash acquisitions are concerned, as shown in Table 12, in the pre-mergers years the median control firm adjusted employee costs per sales range from -3.47% to -5.06% and in the entire pre-merger period the relevant figure is -4.11% which is statistically significant at a 10% significance level. In the post-merger years, however, the adjusted employment costs are statistically very close to control firms standards. In the entire post-merger period the median control firms adjusted employee costs per sales are -1.92% which is statistically insignificant, and the proportion of positive observations is 43.75% (from 31.25% in the entire pre-merger period). Therefore, while before the merger labour costs are below industry's standards, after the merger they are close to them, a fact that indicates deterioration in the labour costs management on behalf of the united entity.

[26] See footnote 2.
[27] See footnote 3.

TABLE 12

Median Annual Employee Cost per Sales for the 16 acquisitions where the method of payment was cash[28].

Pre and Post-Merger Employee Cost per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark – Adjusted Median		% postitive	Number of observations
-3	18.79%	23.16%	-3.47%		31.25%	16
-2	18.08%	23.54%	-5.06%		31.25%	16
-1	19.47%	23.37%	-4.04%		31.25%	16
Median Annual Employee Costs per Sales for years -5 to -1	18.83%	23.37%	-4.11%	**c**	31.25%	48
1	20.38%	23.69%	-3.63%		31.25%	16
2	22.93%	23.69%	-1.30%		43.75%	16
3	24.34%	23.76%	0.56%		56.25%	16
Median Annual Employee Costs per Sales for years 1 to 5	22.10%	23.76%	-1.92%		43.75%	48

Δ (EC per Sales)[29] Years -1, -2, -3 , Years1, 2, 3 -0.038%

c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

Noteworthy also is the finding that in the first post-merger year the adjusted employee costs per sales are -3.63% with the positive observations being 31.25% (i.e. exactly at the level of the pre-merger years) while in year 2 they were increased to -1.30% (and the positive observations have increased to 43.75%) and in year 3 they are further increased to 0.56% (and the positive observations to 56.25% (the figures that are referring to the adjusted employee costs per sales, however, are statistically insignificant).

The above results indicate that in the pre-merger period the median combined target and bidder that engaged to a cash acquisition manages to keep employee costs

[28] See footnote 5.
[29] See footnote 6.

below control firms' standards while in the post-merger period costs converge towards control firms' standards.

In summary, as far as the number of employees is concerned, the median for the combined targets and bidders exhibits employment rates very close to the benchmark both in the pre- and the post-merger periods. In other words, there is not any improvement to the utilisation of the workforce after the merger relatively to the benchmark.

The above evidence does not support the hypothesis that cash transactions (which in many cases are financed by debt) offer a disciplinary motive to the merged firm management for jobs elimination and greater labour costs efficiencies. The evidence is also compatible with the free cash flow hypothesis in the sense that when the available cash of an acquirer is used as a means of payment for a well projected and a beneficial acquisition one would expect a more efficient utilisation of the workforce and an improvement in employee costs rates. Therefore, in the absence of such improvements one could argue that acquirer's management might proceed with acquisitions with negative net present value prospects (at least as far as labour costs are concerned) after having financed all other positive net present value investments.

In Table 13 the effects on employment rates of stock acquisitions are presented. In each of the pre-merger years the combined target and bidder median control firms adjusted number of employees per thousand pounds of sales is statistically insignificant which means that employment rates in the combined target and bidder are about at the levels of those of the control firms. In the entire pre-merger period they are -0.12% and also statistically insignificant. In the post merger years there is a modest and statistically insignificant increase on the number of employees. Specifically, in each of the post-merger years the adjusted number of employees per thousand pounds of sales is positive (though statistically insignificant) and the number of positive observations ranges from 52.38% in the first and the third post-merger years to 61.90% in the second year. In the entire post-merger period the adjusted number of employees per thousand pounds of sales is 0.12% (which however is statistically insignificant) and the proportion of positive observations in the sample increases to 55.56% from 44.44% in the entire pre-merger period.

TABLE 13

Median Annual Number of Employees per £ '000 of Sales for the 21 acquisitions where the method of payment was stock[30].

Pre and Post-Merger Number of Employees per £000 of Sales.

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark – Adjusted Median	% postitive	Number of observations
-3	1.75%	1.80%	-0.16%	47.62%	21
-2	1.56%	1.71%	-0.19%	42.86%	21
-1	1.61%	1.67%	-0.11%	42.86%	21
Median Annual Nr of Employees per Sales for years -5 to -1	1.68%	1.71%	-0.12%	44.44%	63
1	1.64%	1.44%	0.04%	52.38%	21
2	1.57%	1.34%	0.14%	61.90%	21
3	1.40%	1.28%	0.11%	52.38%	21
Median Annual Number of Employees per Sales for years 1 to 5	1.48%	1.34%	0.12%	55.56%	63
Δ (NE per '000 Sales)[31] Years -1, -2, -3 , Years1, 2, 3				0.097%	

Despite the modest increase in employment rates of the sample companies following stock acquisitions, employment costs per sales are improving (Table 14). The combined target and bidder that were engaged in stock acquisitions enjoy better cost economies associated with employee expenditure than the control firms in the pre-merger years. In the entire pre-merger period the median control firms adjusted employment costs per sales are -2.39% and statistically significant at a 5% significance level with the number of positive observations being 38.10%. In the post-merger years there is a further improvement in employee costs per sales. In the year 1 they are falling to -3.83% which is statistically significant at a 10% significance level. In the years 2 and 3, they are -3.72% and 3.82% respectively, however both statistically insignificant. In the entire post-merger period the adjusted

[30] See footnote 2.
[31] See footnote 3.

employment costs per sales are -3.82% which is statistically significant at a 1% significance level and the number of positive observation is falling to 36.51%.

TABLE 14

Median Annual Employee Costs per Sales for the 21 acquisitions where the method of payment was stock[32].

Pre and Post-Merger Employee Costs per Sales

			Benchmark - Adjusted			
Year Relative to Merger	Firm Median	Benchmark Median	Median		% postitive	Number of observations
-3	19.73%	21.68%	-2.87%		38.10%	21
-2	19.29%	22.56%	-2.39%		33.33%	21
-1	20.35%	23.33%	-2.22%		42.86%	21
Median Annual Employee Costs per Sales for years -5 to -1	19.73%	22.56%	-2.39%	**b**	38.10%	63
1	20.20%	24.03%	-3.83%	**c**	28.57%	21
2	20.48%	23.76%	-3.72%		42.86%	21
3	19.94%	23.76%	-3.82%		38.10%	21
Median Annual Employee Costs per Sales for years 1 to 5	20.21%	23.76%	-3.82%	**a**	36.51%	63

Δ (EC per Sales)[33] Years -1, -2, -3 , Years1, 2, 3 0.166%

a - Significant at the 1% significance level using a two-tailed Wilcoxon test.
b - Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

In general, firms that are engaged in stock acquisitions keep the number of their employees at about the same levels as those of the control firms in the post-merger period (though there is some statistically insignificant evidence that there is slight increase in the number of employees after the merger). Despite this finding, employee costs are below those of industry's standards after the merger. These findings indicate that merged firms that used stock as a means of payment may have managed to economise on employee costs after the merger without reducing the

[32] See footnote 5.
[33] See footnote 6.

number of jobs[34]. Indeed, in the first post-merger year the adjusted labour costs are negative and statistically significant[35]. This possibly means that the management of the combined entity might have changed the terms of the employment contacts so as to reduce costs. While this explains the finding of the lower post-merger employee costs in the first three post-merger years it needs further analysis to investigate whether in the subsequent years costs increase due to possible luck of trust on behalf of employees and their subsequent reluctance to invest their firm-specific knowledge in the firm unless they get a higher compensation[36].

The above results are not compatible with those derived by Ghosh (2001) for the U.S. Ghosh found that more employees are let go following stock acquisitions than cash acquisitions and acquisitions that were financed by a combination of stock and cash. In this study, only mixed acquisitions are followed by substantial job elimination.

As it can be seen in Table 15, the combined target and bidder median control firms adjusted number of employees per thousand pounds of sales is falling from -0.02% (which is statistically insignificant) in the entire pre-merger period to -0.06% which is statistically significant at a 5% significance level in the entire post-merger period.

Positive observations are falling to 40.80% in the 5-year post-merger period from 48.28% in the pre-merger period. The highest decline in employee jobs is observed in the years 4 and 5. In the former the adjusted number of employees per thousand pounds of sales is -0.22% and statistically significant at a 10% significance level, while in the latter it is -0.24% and also statistically significant at a 10% significance level.

[34] The comparison of employee costs between the pre- and the post-merger periods here is made with reference to the benchmark firms. Later in this Chapter, using regression analyses, it is clearer that stock acquisitions are followed by cost reductions (after controlling for the effects of industry relatedness).

[35] It should be noted that in none of the pre-merger years the adjusted employee costs are statistically different from zero.

[36] Unfortunately data availability of this study did not allow the analysis to be extended to 5 years after the merger.

TABLE 15

Number of employees per £ '000 of Sales for the 42 acquisitions where the acquirer used a combination of stock and cash for the transaction[37].

Pre and Post-Merger Number of Employees per £ 000 Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		Benchmark - Adjusted % postitive	Number of observations
-5	1.79%	1.91%	-0.13%		37.50%	24
-4	1.66%	1.80%	-0.08%		50.00%	24
-3	1.69%	1.67%	-0.02%		50.00%	42
-2	1.55%	1.54%	0.07%		52.38%	42
-1	1.44%	1.44%	0.00%		47.62%	42
Median Annual Nr of Employees per Sales for years -5 to -1	1.64%	1.71%	-0.02%		48.28%	174
1	1.28%	1.28%	-0.03%		40.48%	42
2	1.23%	1.26%	-0.02%		45.24%	42
3	1.19%	1.22%	-0.04%		42.86%	42
4	1.05%	1.22%	-0.22%	**c**	33.33%	24
5	1.01%	1.19%	-0.24%	**c**	37.50%	24
Median Annual Number of Employees per Sales for years 1 to 5	1.19%	1.26%	-0.06%	**b**	40.80%	174

Δ (NE per '000 Sales)[38] Years -1, -2, -3 , Years1, 2, 3 -0.003%

b - Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

This reduction in the workforce after the merger may be attributed to a capability on behalf of the merged firm's management to utilise labour resources more efficiently, especially if the reduction in employee costs is considered simultaneously. In Table 16 it can be seen that there is a substantial improvement in labour costs in the post-merger period. While in each of the pre-merger years and for the entire pre-merger period the median control firm adjusted employee costs per sales are statistically insignificant, in the post-merger years there is a gradual annual decline which is becoming statistically significant when adjusted employee costs per sales are

[37] See footnote 2.
[38] See footnote 3.

considered for the entire post-merger period. Specifically, the median adjusted employee costs are -0.08% in the year 1, they fall to -0.25% in year 2 and to -0.76% in the year 3. In year 4 the adjusted employee costs per sales fall further to -5.18% and in year 5 they become -4.73%. In the entire post-merger period employment costs are -1.05% and statistically significant at a 5% significance level.

TABLE 16

Employee Costs per Sales for the 42 acquisitions where the acquirer used a combination of stock and cash for the transaction[39].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		Benchmark - Adjusted % postitive	Number of observations
-5	21.67%	21.68%	0.17%		50.00%	24
-4	21.21%	21.68%	-0.40%		45.83%	24
-3	22.72%	23.89%	-0.40%		47.62%	42
-2	24.04%	23.76%	0.58%		57.14%	42
-1	24.00%	23.76%	0.66%		54.76%	42
Median Annual Employee Costs per Sales for years -5 to -1	23.06%	22.56%	0.31%		51.72%	174
1	24.04%	23.52%	-0.08%		47.62%	42
2	23.46%	23.62%	-0.25%		47.62%	42
3	23.05%	23.62%	-0.76%		42.86%	42
4	18.58%	23.62%	-5.18%		37.50%	24
5	19.04%	23.62%	-4.73%		37.50%	24
Median Annual Employee Costs per Sales for years 1 to 5	22.66%	23.62%	-1.05%	**c**	43.68%	174

Δ (EC per Sales)[40] Years -1, -2, -3 , Years1, 2, 3 -0.723%

c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

In summary, acquisitions that were financed by cash or stock do not exhibit a better utilisation of their workforce relatively to the benchmark firms in the years following the merger. Employee costs in cash acquisitions converge towards those of

[39] See footnote 5.
[40] See footnote 6.

the control firms in the post-merger years from below control firms' standards in the pre-merger years. In stock acquisitions employee costs are below benchmark's levels both in the pre- and the post-merger periods. When the financing method was a combination of stock and cash both the number of employees per thousand pounds of sales and the employee costs per sales are below benchmark's standards in the post-merger years in contrast to the pre-merger years where both figures are statistically close to industry's standards. These results indicate that in mixed acquisitions there are the greatest labour utilisation efficiencies.

8.3.4 Employment Effects and Strategic Acquisitions.

So far, the evidence of this study has indicated that friendly, related and stock acquisitions are followed by a reduction in the number of employees and by labour costs savings which were more observable after the third post-acquisition year. The results in this Section refer to Strategic acquisitions, i.e. to acquisitions where the method of payment was stock or a combination of stock and cash, the bidder and the target belonged to the same Level 5 Industrial Sector and the bid was friendly.

As can be seen in Table 17, whilst targets and bidders that were engaged in Strategic acquisitions exhibit employment rates equivalent to those of the control firms' standards in each of the pre-acquisition years, in the entire pre-merger period the median control firms adjusted number of employees per thousand pounds of sales is -0.16% and statistically significant at a 10% significance level. This implies that acquirers and targets that conduct Strategic transactions, i.e. when acquirers select targets from within the industry in which they belong and use other means of payment than cash to finance agreed acquisitions, they utilise employee resources more efficiently than could group firms in the pre-merger period[41].

Regarding the post-merger period, in years 1, 2, and 3, the adjusted number of employees per thousand pounds of sales is -0.15%, -0.10% and -0.09% respectively, all statistically insignificant. In the year 4, however, the median adjusted number of employees declines to -0.38% and in the year 5 to -0.36%, which

[41] It must be stressed however that this finding refers to the aggregate data of the combined target and bidder.

are both statistically significant at a 10% significance level. In the entire post-merger period the adjusted number of employees is -0.19% which is statistically significant at a 5% significance level.

TABLE 17

Median Annual Number of Employees per £ '000 of Sales for the 30 acquisitions where the method of payment was stock or a combination of stock and cash, the bidder and the target belonged to the same Level 5 Industrial Sector, and the bid was friendly[42].

Pre and Post-Merger Number of Employees per £ 000 of Sales

			Benchmark - Adjusted			
Year Relative to Merger	Firm Median	Benchmark Median	Median		% postitive	Number of observations
-5	1.53%	1.80%	-0.28%		33.33%	18
-4	1.45%	1.71%	-0.28%		38.89%	18
-3	1.56%	1.67%	-0.14%		46.67%	30
-2	1.41%	1.54%	-0.05%		46.67%	30
-1	1.34%	1.44%	-0.04%		43.33%	30
Median Annual Nr of Employees per K of Sales for years -5 to -1	1.41%	1.67%	-0.16%	**c**	42.86%	126
1	1.23%	1.28%	-0.15%		33.33%	30
2	1.16%	1.26%	-0.10%		40.00%	30
3	1.11%	1.22%	-0.09%		36.67%	30
4	0.82%	1.19%	-0.38%	**c**	33.33%	18
5	0.80%	1.13%	-0.36%	**c**	33.33%	18
Median Annual Number of Employees per K of Sales for years 1 to 5	1.08%	1.26%	-0.19%	**b**	35.71%	126

Δ (NE per '000 Sales)[43] Years -1, -2, -3 , Years1, 2, 3 0.099%

b - Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

The number of positive observations also falls to 35.71% in the entire post-merger period from 42.86% in the pre-merger years.

[42] See footnote 2.
[43] See footnote 3.

TABLE 18

Median Annual Employee Costs per Sales for the 30 acquisitions where the method of payment was stock or a combination of stock and cash, the bidder and the target belonged to the same Level 5 Industrial Sector, and the bid was friendly[44].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		% postitive	Number of observations
-5	18.67%	21.96%	-4.34%	c	38.89%	18
-4	18.06%	22.56%	-4.66%	c	33.33%	18
-3	19.01%	24.03%	-4.33%		33.33%	30
-2	19.72%	23.76%	-3.56%	c	33.33%	30
-1	20.15%	23.76%	-2.80%	c	36.67%	30
Median Annual Employee Costs per Sales for years -5 to -1	19.19%	23.76%	-3.85%	a	34.92%	126
1	19.43%	23.41%	-4.32%	b	30.00%	30
2	18.18%	23.62%	-5.50%	b	26.67%	30
3	18.67%	23.62%	-5.11%		30.00%	30
4	16.68%	23.76%	-6.79%		27.78%	18
5	16.99%	24.08%	-6.42%	c	27.78%	18
Median Annual Employee Costs per Sales for years 1 to 5	18.30%	23.62%	-5.35%	a	28.57%	126

Δ (EC per Sales)[45] Years -1, -2, -3 , Years1, 2, 3 -0.550%

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b - Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

Firms that were engaged in Strategic acquisitions are more labour cost efficient than the control firms in the pre-merger years (Table 18). In the year -1 the control firms adjusted employee costs per sales are -2.80% and in year -2 they are -3.56%, both statistically significant at a 10% significance level. In the years -4 and -5 the adjusted employee costs per sales are -4.66% and -4.34% respectively and

[44] See footnote 5.
[45] See footnote 6.

statistically significant at a 10% significance level. In the year -3, they are -3.56% and again statistically insignificant. In the entire pre-merger period the adjusted employee costs per sales are -3.85% and statistically significant at a 1% significance level with the number of positive observations being 34.92%.

During the post-merger years the adjusted employee costs decline dramatically, from -4.32% in the year 1 to -5.50% in the year 2 (which are both statistically significant at a 5% significance level), to 5.11% in the year 3. In the year 4 they fall to -6.79%, and in the year 5 to -6.42% (which is statistically significant at a 10% significance level). In the entire post-merger period the median control firms adjusted employee costs per sales become -5.35% which is statistically significant at a 1% significance level. The number of positive observations falls to 28.57%.

The results indicate that firms that are engaged in Strategic acquisitions are more labour costs efficient and employ fewer employees per every thousand pounds of sales than the control firms in the pre-merger years. After the merger they retain their efficiency levels since the number of jobs and the employee costs are below control group's standards.

8.3.5. Employment Effects and the Size of the Acquisition.

The effects on employment and employee costs of large acquisitions versus small ones are presented in this Section. Table 19, illustrates the median control firms adjusted number of employees per thousand pounds of sales for the 38 largest acquisitions in the sample. The results indicate that large acquisitions do not affect employment rates. The combined target and bidder exhibit the same employment rates as those of the control firms both in the pre- and the post-merger periods. Specifically, in the entire pre-merger period the median control firms adjusted number of employees per thousand pounds of sales is 0.03% and statistically insignificant with the number of positive observations being 51.35%. In the entire post-merger period the figure is falling to -0.01% but it is also statistically insignificant. The number of positive observations is falling to 48.65%.

TABLE 19

Median Annual Number of Employees per £ '000 of Sales for the 38 largest acquisitions of the sample. Relative bidders' size ranges from 7% to 317% of the size of target; size is based on market values of the two firms at the beginning of year -1[46].

Pre and Post-Merger Number of Employees per £ 000 Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median	Benchmark - Adjusted % postitive	Number of observations
-5	2.08%	1.91%	0.09%	52.94%	17
-4	1.84%	1.80%	0.01%	52.94%	17
-3	1.78%	1.71%	0.06%	50.00%	38
-2	1.72%	1.67%	0.08%	52.63%	38
-1	1.64%	1.54%	0.01%	50.00%	38
Median Annual Nr of Employees per Sales for years -5 to -1	1.75%	1.71%	0.03%	51.35%	148
1	1.39%	1.34%	0.05%	52.63%	38
2	1.31%	1.28%	0.03%	50.00%	38
3	1.28%	1.26%	0.00%	52.63%	38
4	1.04%	1.22%	-0.20%	35.29%	17
5	0.93%	1.19%	-0.23%	41.18%	17
Median Annual Number of Employees per Sales for years 1 to 5	1.28%	1.26%	-0.01%	48.65%	148
Δ (NE per '000 Sales)[47] Years -1, -2, -3 , Years1, 2, 3				0.044%	

Employment costs are also at the standards of the control firms for large acquisitions. In the entire pre-merger period the median control firms adjusted employment costs per sales are -0.38% but the figure is statistically insignificant. Similarly, in the post-merger period the relevant figure is -0.46% and also statistically insignificant. The number of positive observations is 47.97% in the pre-merger years and 46.62% in the post-merger period.

In summary, it is apparent from the results that in large acquisitions, the employment rates and the costs associated with employees remain at about the same levels as those of the control firms both in the pre- and the post-merger periods.

[46] See footnote 2.
[47] See footnote 3.

TABLE 20

Median Annual Employee Costs per Sales for the 38 largest acquisitions of the sample. Relative bidders' size ranges from 7% to 317% of the size of target; size is based on market values of the two firms at the beginning of year -1[48].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median	Benchmark - Adjusted % postitive	Number of observations
-5	20.72%	21.57%	-0.83%	47.06%	17
-4	20.24%	21.68%	-3.33%	47.06%	17
-3	21.26%	22.56%	-0.44%	42.11%	38
-2	24.04%	23.76%	0.15%	52.63%	38
-1	23.74%	23.58%	0.20%	50.00%	38
Median Annual Employee Costs per Sales for years -5 to -1	22.44%	22.56%	-0.38%	47.97%	148
1	22.83%	23.76%	-0.53%	44.74%	38
2	23.13%	23.62%	-0.46%	44.74%	38
3	23.55%	23.69%	-0.18%	47.37%	38
4	24.78%	23.41%	1.10%	52.94%	17
5	22.58%	23.62%	-0.84%	47.06%	17
Median Annual Employee Costs per Sales for years 1 to 5	23.40%	23.62%	-0.46%	46.62%	148
Δ (EC per Sales)[49] Years -1, -2, -3 , Years1, 2, 3				-0.140%	

The picture is exactly the opposite in the case of small acquisitions. As can be seen in Table 21, firms that were engaged in small acquisitions exhibit the same employment rates as those of the control firms in each of the pre-merger years. In the entire pre-merger period, however, the median control firms adjusted number of employees per thousand pounds of sales is -0.13% and statistically significant at a 1% significance level.

In year 1 the adjusted number of employees is -0.14% and it falls to -0.15% in the year 2. Both are statistically significant at a 10% significance level. A further

[48] See footnote 5.
[49] See footnote 6.

decline is observed in the year 3 to -0.16% which is statistically significant at a 5% significance level. In the year 4 the adjusted number of employees becomes -0.21% which is statistically significant at a 10% significance level and in the year 5 they are -0.23% and statistically significant at a 5% significance level. The number of positive observations falls from 42.76% in the entire pre-merger period to 34.21% in the entire post-merger period.

TABLE 21

Median Annual Number of Employees per £ '000 of Sales for the 38 smallest acquisitions of the sample. Relative bidders' size ranges from 400% to 37516% of the size of target; size is based on market values of the two firms at the beginning of year -1[50].

Pre and Post-Merger Number of Employees per £ 000 Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		% postitive	Number of observations
-5	1.71%	1.91%	-0.11%		36.84%	19
-4	1.71%	1.80%	0.04%		52.63%	19
-3	1.59%	1.76%	-0.15%		47.37%	38
-2	1,45%	1.69%	-0.27%		39.47%	38
-1	1.36%	1.61%	-0.11%		39.47%	38
Median Annual Nr of Employees per Sales for years -5 to -1	1.51%	1.71%	-0.13%	**a**	42.76%	152
1	1.23%	1.39%	-0.14%	**c**	34.21%	38
2	1.12%	1.31%	-0.15%	**c**	39.47%	38
3	1.10%	1.27%	-0.16%	**b**	31.58%	38
4	1.07%	1.22%	-0.21%	**c**	36.84%	19
5	0.99%	1.19%	-0.23%	**b**	26.32%	19
Median Annual Number of Employees per Sales for years 1 to 5	1.10%	1.26%	-0.16%	**a**	34.21%	152

Δ (NE per '000 Sales)[51] Years -1, -2, -3 , Years1, 2, 3
0.055%

a - Significant at the 1% significance level using a two-tailed Wilcoxon test.
b - Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[50] See footnote 2.
[51] See footnote 3.

The results appear to be in contrast to those derived by Conyon et.al. (op.cit.), who found that smaller acquirers make proportionately larger reductions in labour demand than their larger counterparts.

TABLE 22

Median Annual Employee Costs per Sales for the 38 smallest acquisitions of the sample. Relative bidders' size ranges from 400% to 37516% of the size of target; size is based on market values of the two firms at the beginning of year -1[52].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		% postitive	Number of observations
-5	21.63%	21.68%	-0.33%		47.37%	19
-4	21.08%	21.68%	-0.46%		42.11%	19
-3	19.15%	22.12%	-3.47%	**b**	36.84%	38
-2	18.07%	22.94%	-5.06%	**a**	34.21%	38
-1	18.40%	23.33%	-4.53%	**a**	36.84%	38
Median Annual Employee Costs per Sales for years -5 to -1	18.83%	22.56%	-3.97%	**a**	38.16%	152
1	18.84%	23.89%	-5.07%	**b**	31.58%	38
2	19.48%	23.76%	-4.00%	**c**	42.11%	38
3	17.81%	23.76%	-5.56%	**b**	39.47%	38
4	18.22%	23.62%	-5.93%	**c**	31.58%	19
5	18.66%	23.62%	-4.91%	**c**	31.58%	19
Median Annual Employee Costs per Sales for years 1 to 5	18.38%	23.76%	-5.02%	**a**	36.18%	152

Δ (EC per Sales)[53] Years -1, -2, -3 , Years1, 2, 3 -0.206%

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.
b- Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

Employee costs per sales also decrease relatively to control firms following small acquisitions (Table 22). The median control firm adjusted employee costs per

[52] See footnote 5.
[53] See footnote 6.

sales in the pre-merger period are -3.47% and statistically significant at a 5% significance level in the year -3, -5.06% and statistically significant at a 1% significance level in the year -2 and -4.53% and statistically significant at a 1% significant level in the year -1. In the entire pre-merger period the adjusted employee costs are -3.97% which is statistically significant at a 1% significance level. Following the acquisition, the adjusted employee costs per sales fall to -5.07% (which is statistically significant at a 5% significance level) in the year 1, they become -4.00% (and statistically significant at a 10% significance level) in the year 2 and -5.56% (and statistically significant at a 5% significance level) in the year 3. In the years 4 and 5, the adjusted employee costs per sales become -5.93% and -4.91% respectively, both being statistically significant at a 10% significance level. In the entire post-merger period the adjusted employee costs per sales fall to -5.02% which is statistically significant at a 1% significance level.

Small acquisitions exhibit a more efficient utilisation of labour resources in each of the pre-merger years relatively to group firms and labour costs which are below those of the control firms standards both before and after the merger. In contrast, large acquisitions do not lead to labour costs improvement or a more efficient utilisation of employees[54]. This finding implies that possibly acquirers that conduct small acquisitions can have better control over targets' resources than acquirers that conduct large acquisitions. This, in turn, allows for a better utilisation of them and a more efficient allocation of the production factors. The acquirer may need a much smaller company either to use part of its resources or for its specific know-how and expertise, divesting the less important facilities. Moreover, small acquisitions are possibly more 'digestible' than larger ones, and therefore, faster integration leads to labour cost economies and to the elimination of unnecessary jobs immediately after the merger. Because the combined target and bidder is more efficient in terms of employment costs and employee utilisation than the control firms in the pre-merger years, it is possible that this trend is continued after the merger due to an organisational culture that leads the specific acquirers to select smaller targets that have the potential for such efficiencies.

[54] In fact, as can be seen in regression analysis in Table 28 later in this chapter, labour costs increase by a statistically significant value of 2.7% per annum after controlling for the effects of the method of payment, industry relatedness and whether the acquisition price was at premium or at a discount.

8.3.6. Employment Effects and the Acquisition Premium.

The effects on employment and the employee costs of acquisitions where the acquirer paid a relatively high acquisition premium versus the acquisitions where the acquirer paid a relatively small acquisition premium are presented in this Section.

TABLE 23

Median Annual Number of Employees per £ '000 of sales for the 27 cases of the sample where the acquirer paid a premium between 162% and 658.5% of the acquiree's market value as at the beginning of the year -1[55].

Pre and Post-Merger Number of Employees per £ 000 Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark – Adjusted Median		Benchmark – Adjusted % postitive	Number of observations
-5	1.56%	1.80%	-0.11%		38.46%	13
-4	1.44%	1.71%	-0.23%		46.15%	13
-3	1.60%	1.67%	0.03%		51.85%	27
-2	1.43%	1.54%	-0.06%		48.15%	27
-1	1.44%	1.44%	-0.02%		48.15%	27
Median Annual Nr of Employees per Sales for years -5 to -1	1.50%	1.67%	-0.06%		47.66%	107
1	1.23%	1.28%	-0.14%		40.74%	27
2	1.22%	1.26%	-0.08%		44.44%	27
3	1.15%	1.22%	-0.06%		44.44%	27
4	0.78%	1.19%	-0.41%	**c**	46.15%	13
5	0.75%	1.13%	-0.39%	**c**	38.46%	13
Median Annual Number of Employees per Sales for years 1 to 5	1.14%	1.22%	-0.11%	**b**	42.99%	107

Δ (NE per '000 Sales)[56] Years -1, -2, -3 , Years1, 2, 3 - 0.098%

b – Significant at the 5% significance level using a two-tailed Wilcoxon test.
c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

[55] See footnote 2.
[56] See footnote 3.

As it can be seen in Table 23, when the acquirer pays a high premium over the intrinsic value of the target, the number of employees is below control group's standards in the post-merger period while in the pre-merger period is statistically indifferent from the median of the control firms. Specifically, while in the each of the pre-merger years and in the entire pre-merger period the median control firm adjusted number of employees per thousand pounds of sales is statistically indifferent from zero, in the post-merger years it is negative and statistically significant. In the years 1, 2, and 3, the adjusted number of employees per thousand pounds of sales are -0.14%, -0.08% and -0.06% respectively, all statistically insignificant. In the years 4 and 5, however, there is a sharp decline in the employment rates relatively to control firms standards, which is -0.41% for the fourth post-merger year and -0.39% for the fifth post-merger year (both figures are statistically significant at a 10% significance level). In the entire post-merger period the adjusted number of employees per sales are -0.11% and statistically significant at a 5% significance level with the number of positive observations fall at 42.99% from 47.66% in the entire pre-merger period.

The median control firms adjusted labour costs per sales are below the benchmark standards both in the pre- and the post-merger periods (Table 24). However, there is some evidence of further improvement in the post-merger years especially after the year 3. In the fourth post-merger year they become -7.69% and in the fifth post-merger year -7.99% which are both statistically significant at a 5% significance level. The adjusted employee costs per sales are -4.87% in the entire pre-merger period and -5.34% in the entire post merger period; both figures are statistically significant at a 1% significance level. The number of positive observations between the two periods is 35.51% in the entire pre-merger period and 33.64% in the entire post-merger period. Thus, in transactions where the target was purchased at relatively large premium the combined targets and bidders manage to keep employee costs below industry standards before the merger as well as after it.

TABLE 24

Median Annual Employee Costs per Sales for the 27 cases of the sample where the acquirer paid a premium between 162% and 658.5% of the acquiree's market value as at the beginning of the year -1[57].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median		% postitive	Number of observations
-5	17.94%	21.68%	-4.93%		38.46%	13
-4	16.89%	22.56%	-6.21%	**c**	30.77%	13
-3	20.00%	24.03%	-3.47%	**b**	37.04%	27
-2	18.85%	23.76%	-4.90%	**b**	37.04%	27
-1	19.95%	23.76%	-4.19%	**b**	33.33%	27
Median Annual Employee Costs per Sales for years -5 to -1	18.85%	23.76%	-4.87%	**a**	35.51%	107
1	18.45%	23.41%	-4.91%	**b**	33.33%	27
2	20.76%	23.62%	-2.86%	**b**	37.04%	27
3	18.82%	23.62%	-4.88%	**b**	40.74%	27
4	16.41%	23.62%	-7.69%	**b**	23.08%	13
5	16.23%	24.08%	-7.99%	**b**	23.08%	13
Median Annual Employee Costs per Sales for years 1 to 5	18.20%	23.62%	-5.34%	**a**	33.64%	107

Δ (EC per Sales)[58] Years -1, -2, -3 , Years1, 2, 3 -0.578%

a- Significant at the 1% significance level using a two-tailed Wilcoxon test.

c- Significant at the 10% significance level using a two-tailed Wilcoxon test.

In cases of the sample where the target was purchased at a discount the picture is exactly the opposite. There is no evidence of job elimination after the takeover while there is some evidence of deterioration in employee expenditure.

[57] See footnote 5.

[58] See footnote 6.

TABLE 25

Median Annual Number of Employees per £ '000 Sales for the 27 acquisitions where the acquirer paid an amount that ranges from 16% to 100% of the acquiree's market value as at the beginning of the year -1[59].

Pre and Post-Merger Number of Employees per K Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark – Adjusted Median	Benchmark – Adjusted % postitive	Number of observations
-5	2.24%	1.99%	0.39%	58.33%	12
-4	2.11%	1.86%	0.19%	58.33%	12
-3	1.55%	1.80%	-0.16%	40.74%	27
-2	1.48%	1.71%	-0.07%	37.04%	27
-1	1.54%	1.67%	-0.07%	44.44%	27
Median Annual Nr of Employees per Sales for years -5 to -1	1.61%	1.71%	-0.07%	44.76%	105
1	1.38%	1.44%	-0.03%	48.15%	27
2	1.23%	1.34%	-0.04%	44.44%	27
3	1.12%	1.28%	-0.09%	40.74%	27
4	1.12%	1.24%	-0.06%	41.67%	12
5	1.08%	1.21%	-0.13%	41.67%	12
Median Annual Number of Employees per Sales for years 1 to 5	1.22%	1.28%	-0.05%	43.81%	105
Δ (NE per '000 Sales)[60] Years -1, -2, -3 , Years1, 2, 3				0.036%	

As can be seen in Table 25, the median control firm adjusted number of employees per thousand pounds of sales is insignificantly different from zero in all the pre- and post-merger years and in the entire pre- and post-merger period. Similarly, the median control firms adjusted employee costs per sales are statistically insignificant both in the pre- and the post-merger periods (Table 26).

[59] See footnote 2.
[60] See footnote 3.

TABLE 26

Median Annual Employee Costs per Sales for the 27 acquisitions where the acquirer paid an amount that ranges from 16% to 100% of the acquiree's market value as at the beginning of the year -1[61].

Pre and Post-Merger Employee Costs per Sales

Year Relative to Merger	Firm Median	Benchmark Median	Benchmark - Adjusted Median	Benchmark - Adjusted % postitive	Number of observations
-5	23.95%	21.54%	2.16%	58.33%	12
-4	22.63%	21.63%	1.00%	58.33%	12
-3	18.48%	21.68%	-3.47%	37.04%	27
-2	21.46%	22.56%	-2.29%	44.44%	27
-1	22.46%	23.33%	-1.57%	48.15%	27
Median Annual Employee Costs per Sales for years -5 to -1	21.30%	22.56%	-1.57%	46.67%	105
1	22.83%	24.20%	-1.29%	40.74%	27
2	23.37%	23.76%	-0.06%	48.15%	27
3	24.16%	23.76%	0.75%	51.85%	27
4	25.25%	23.36%	1.81%	75.00%	12
5	25.55%	23.52%	1.96%	66.67%	12
Median Annual Employee Costs per Sales for years 1 to 5	24.75%	23.76%	0.94%	52.38%	105
Δ (EC per Sales)[62] Years -1, -2, -3 , Years1, 2, 3				0.027%	

The results indicate that firms which engaged in acquisitions at a premium are more efficient in terms of employee utilisation and employee cost savings than firms which engaged in acquisitions at a discount, in the post-merger period. This finding implies that the payment of a premium may be justified by potential employee cost savings which are realised after the merger. Acquirers may select targets on the basis of the realisation of future synergies in the utilisation of employee resources. By the same token when synergies in employee utilisation are absent the deal is closed at a discount since there is not much space for cost savings efficiencies as far as the employees are concerned.

[61] See footnote 5.
[62] See footnote 6.

8.4. Employment Effects of M&As. A Multivariate approach.

So far in this Chapter we have considered the employment effects of M&As using univariate approach, i.e. by examining the employment variables in the entire sample and in the different sub-samples without reference to the effect of other factors that may affect the employment rates and the employee costs. Moreover, the point of reference for inferring these effects was the median value of the relevant variables of the portfolio of all companies in the Stock Exchange Year Book for which data were available in Datastream for each pre- and post-merger year and for the entire pre- and post-merger periods.

To test the robustness of the results and to control for other variables in each case and in order for them to be comparable with those derived by previous studies we considered a multivariate approach for examining the employment effects of M&As. In this case, the adopted benchmark was a pair of firms that was matched to each target and bidder on the basis of pre-merger performance, industrial relatedness, and size. The point of reference for examining the effects of M&As on employment and employee costs was the difference of the medians of the respective variables for each combined target and bidder between the post- and pre-merger 3-year periods. The number of employees per thousand pounds of sales and employee costs per sales were adjusted for each combined target and bidder and for each year by subtracting the values of the respective variables of the matched firms. The dependent variables of the regressions are as defined in Chapter 4.

The results that are produced by multivariate analysis are considered more robust than those derived by univariate analysis because the effects of M&As on employment can be captured after controlling for other variables that are related to acquisition. Moreover, as discussed in Chapter 5, the methodology that was adopted to implement the multivariate analysis focuses directly on the value of the change of the variables under examination, unlike the methodology adopted for the univariate analysis which compares employment rates and employee costs by reference to the control group for each year and for the entire pre- and post-merger periods. Finally, the use of pairs of matched firms as a benchmark in the multivariate analysis is

considered more precise than the portfolio of all companies in Stock Exchange Year Book which was used in the univariate analysis.

Specifically, in this topic the change of the median adjusted number of employees and employee costs between the 3-year post- and the 3-year pre-merger periods are regressed against dummy variables that describe several merger characteristics. Merger characteristics include the method of payment, the attitude of target's management towards the offer proposal, the industry relatedness between target and bidder and the nature of the acquisition – i.e., whether it is considered as strategic or not. In addition, we examine the effects on employment for acquisitions where the acquirer paid a premium over the intrinsic value of the target and we also separate between large and small acquisitions.

The dummy variables that describe merger characteristics are defined as following. The variable *(MIX)* takes the value of '1' when the acquisition was financed by a combination of stock and cash and '0' otherwise, the variable *(CASH)* takes the value of 1 when the acquisition was financed by cash and '0' otherwise, the variable *(FRIENDLY)* takes the value of '1' when the acquisition was agreed between the target's and bidder's management and '0' otherwise and the variable *(RLTD)* takes the value of '1' when the target and the bidder belong to the same Level 5 Industrial Sector and '0' otherwise. When the acquisition is a Strategic one the dummy variable *(FRxRLTDxnCASH)* takes the value of '1' and the value '0' otherwise. Finally, the variable *(RELPREM1)* takes the value of '1' when the target was purchased at premium over its intrinsic value and the value '0' when it was purchased at a discount while the variable *(LGacqn)* takes the value of '1' if the acquisition is defined as large and the value '0' if the acquisition is defined as small.

The results from the Ordinary Least Squares regressions are presented in Table 8.1, Appendix. However, having identified an unknown form of heteroscedasticity, regressions were run again applying White Heteroscedasticity Correction Test. Corrected results are presented in Table 27.

The dependent variable in regressions (1)-(8) is the difference of the median matched firm adjusted number of employees per thousand pounds of sales between the 3-year post-merger period and the 3-year pre-merger period. Results in regression (1) indicate that the method of payment does not have any effect on the change in

employment rates after the acquisition. These results are in contrast to those derived by Ghosh (op. cit); the author reports that in acquisitions where the method of payment was a combination of stock and cash there is a significant (at a 10% significance level) decline in employment rates by 4.98% between the 3 post- and the an the 3 pre-merger years. It is noteworthy, however, that for the sample companies the sign of the *(STOCK)* coefficient is negative while it is positive for the *(CASH)* coefficient. This indicates an insignificant decline in employment rates for stock acquisitions and an insignificant increase for cash acquisitions between the post- and the pre-merger periods.

As shown in regression (2), the coefficient and the t-statistic of the independent variable indicate a negative but insignificant effect of the industry relatedness between targets and bidders. The sign of the *(RELATED)* coefficient is negative indicating a decline of the employment rates for the sample companies after the merger. In Regression (3) the coefficient of the variable *(FRIENDLY)* is statistically insignificant but the intercept coefficient is -0.002 and statistically significant indicating a 0.2% decline in the number of employees per thousand pounds of sales in the 3-post merger years in comparison to the 3 pre-merger years for the hostile acquisitions. This finding is in contrast to the results produced by the univariate analysis as presented in Table 3 of this Chapter. Possibly, this difference is due to the different benchmarks used to measure the adjusted number of employees per thousand pounds of sales.

As can be seen from results produced in regression (4), in Strategic acquisitions the change in number of employees is not substantial, since the coefficient of the dummy variable *(FRxRELATxnCASH)* is not statistically significant. In regression (5), large acquisitions exhibit an insignificant decline in employment rates of 0.1% after the merger. This is consistent with results produced using industry firms as a benchmark in the univariate analysis as presented in Table 20 where the employee rates for large acquisitions remain at the benchmark's levels both in the pre- and the post-merger periods. From the results derived from regression (6) it can be seen that whether the acquirer paid a relatively high premium has no statistically significant effect on employment rates.

In regression (7) the dependent variable that denotes the changes in employees between the post- and the pre-merger periods is regressed against the variables that denote the method of payment after controlling for the effects of industry relatedness between targets and bidders, and the attitude of target's management towards the deal. Only the coefficient of the dummy variable *(FRIENDLY)* is statistically significant indicating a 0.3% increase in the number of employees relative to the benchmark firms after the merger. Results produced by Ghosh (op.cit.) indicate an increase in employment rates for friendly acquisitions which however is statistically insignificant. Sample acquisitions that were financed by cash, exhibit an increase in employment rates which is statistically insignificant. In stock acquisitions employment rates decline by an insignificant value of 0.2%, while in related acquisitions employment rates for sample companies decline by 0.2% as well (which is statistically insignificant). Ghosh (op.cit.) reports an insignificant increase of the employment rates for cash acquisitions and an insignificant decrease for acquisitions that were financed by a combination of stock and cash. For stock acquisitions the author reports an insignificant decline in employment rates while in related acquisitions there is a statistically significant increase.

In regression (8) two additional dummy variables were added to control for the effects of the size of the acquisition and of whether the acquisition closed at a premium. Acquisitions that were financed by cash exhibit a statistically significant increase in employment rates relative to the benchmark of 0.4%. Friendly acquisitions also exhibit a statistically significant positive change in employment between the post- and the pre-merger years of 0.3%. An insignificant increase in the number of employees for the sample companies is also observed for acquisitions where the target was purchased at a premium and an insignificant increase in employment rates is observed for large acquisitions. Stock acquisitions in the sample exhibit decreasing employment rates after the merger which however is statistically insignificant.

The dependent variable in regressions (10)-(16) is the difference of the median matched firm adjusted employee costs per sales between the 3-year post-merger period and the 3-year pre-merger period. Results from regression (10)

indicate a statistically significant decline of 2.8% in employee costs after the merger when the acquisition is financed by stock. In cash acquisitions employee costs increase but the coefficient of the respective variable is statistically insignificant. The coefficient of *(RELATED)* variable in regression (10) is -0.022 and statistically significant indicating a decline in employee expenditures of 2.2% in the post-merger period. In friendly acquisitions employee costs increase but the coefficient of the dummy variable is statistically insignificant as can be seen in regression (11). Regression (12) indicates an insignificant decline of 1.6% in employee costs in the post-merger period for strategic acquisitions in the sample since the coefficient of the respective variable is -0.016 and statistically insignificant. Regression (13) indicates that in large acquisitions of the sample the median adjusted employee expenditure fall by 0.2% in the post-merger period (however this is a statistically insignificant decline). Whether a relatively high premium was paid is a statistically insignificant factor for labour cost increase in the post-merger years for the sample companies since in regression (14) the coefficient of the dummy variable *(RELPREM)* is 0.022 and statistically insignificant.

As can be seen from results in regression (15) in stock acquisitions there is a statistically significant decline in the median adjusted employment costs per sales in the post-merger period after controlling for the effects of friendly and related acquisitions. Cash acquisitions exhibit an insignificant increase in employee costs in the post-merger years while related acquisitions exhibit a statistically insignificant decline in employee costs. However, after controlling for the effects of the acquisition size and for the effects of the acquisitions at a premium in regression (16), stock acquisitions exhibit a statistically significant decline in the median adjusted employment costs of 3.9% in the post-merger years while cash acquisitions exhibit a statistically significant increase of 3.9% in the post-merger years. In related acquisitions the median adjusted employee costs decline by 3.4% in the post-merger years, while friendly acquisitions do not have any significant effect on employee costs (although the sign of the coefficient of the respective dummy variable is positive). In acquisitions that were carried out at a relatively high premium a statistically significant increase in employment costs of 2.6% is observed. After controlling for the effects of the above independent variables, the sign of the

coefficient of dummy variable *(LARGEacqn)* becomes positive and statistically significant.

The results of the regressions presented in Table 27 provide some interesting insights into the issue of the employment effects of M&As. Acquisitions that were financed by stock lead to labour cost economies without a substantial reduction of workforce. Cash acquisitions lead to an increase in the workforce but not in the employee costs in the three years following the takeover (however an increase in labour costs following cash acquisitions is observed after controlling for other variables (regressions 15 and 16 in table 27)).

As expected, in hostile acquisitions the number of employees decline after the merger but not the costs associated with them. This implies that there is a more efficient utilisation of the workforce but costs fail to fall substantially since the reorganisation of tasks and responsibilities that typically follow hostile acquisitions may impose additional costs to the merged entity. On the other hand, in friendly acquisitions the number of employees increases but the costs associated with them do not change. This finding implies that friendly acquisitions may be more beneficial for the shareholders since with the same level of spending for the workforce the merged company creates more jobs in the case of friendly acquisitions than in the case of hostile ones. This difference in results between friendly and hostile acquisitions could possibly be explained by the strategic orientation of the two types of acquisitions. Friendly acquisitions are typically conducted with the aim of expansion in the same product markets in order to increase market share and to exploit economies of scale and scope. Therefore, cost savings from the exploitation of scale and scope economies offset additional employee costs that are incurred from the recruitment of additional employees that may be required for the expanded operations. Hostile acquisitions, on the other hand, are typically conducted with the aim of more efficient utilisation of target's resources by a more competent or diligent management. This implies that attempting to rationalise and more efficiently utilise the new resources, acquiring management may cut unnecessary jobs or it may renege existing employee contracts. This creates the opportunity for employee cost savings which are being offset by the cost that are associated with this reorganisation of managerial operations in the manner analysed by Shleifer and Summers (1988).

Consistently with what is expected, the results also indicate that related acquisitions lead to employee cost savings. However the number of employees remains constant between the post- and the pre-merger periods. This can be possibly explained by the fact that in related acquisitions the target and the bidder operate in the same product markets which creates opportunities for the exploitation of synergies in the utilisation of the workforce.

Finally, large acquisitions exhibit an employee costs increase with a no statistically significant change in the number of employees after the merger. This finding could possibly be explained by the increased employee expenditure that may be required for the integration of a relatively large target after the merger. Reorganising employment structure in the first post-merger years may impose unexpected costs like compensations for retiring management teams or expenditure associated with the recruitment of new staff with managerial skills necessary for the merger success. Acquisitions where the target was purchased at a premium exhibit an increase in labour costs but not in the number of employees which indicates an increase in the costs per employee.

TABLE 27 – (Heteroscedasticity Corrected (White test))

OLS regressions of the change in the median matched firm adjusted number of employees per thousand pounds of sales and of the change in median employment costs per sales between the 3-year post- and the 3-year pre-merger periods on dummy variables that describe certain merger characteristics.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
INDEP. VARIABLES	**Δ_nrEMPL**	**Δ_nrEMPL**	**Δ_nrEMPL**	**Δ_nrEMPL**	**Δ_nrEMPL**	**Δ_nrEMPL**	**Δ_nrEMPL**	**Δ_nrEMPL**	**Δ_EMPL_COSTS**	**Δ_EMPL_COSTS**	**Δ_EMPL_COSTS**	**Δ_EMPL_COSTS**	**Δ_EMPL_COSTS**	**Δ_EMPL_COSTS**	**Δ_EMPL_COSTS**	**Δ_EMPL_COSTS**
CONST	**-0.000**	**0.000**	**-0.002 ****	**-0.000**	**0.000**	**-0.010**	**-0.001**	**-0.003**	**0.003**	**0.015**	**-0.004**	**0.006**	**0.001**	**-0.007**	**0.021**	**-0.006**
t-stat	-0.850	0 .223	-2.055	-0.631	-0.175	-1.19	-0.918	-1.653	0.352	1.437	-0.366	0.886	0.136	-1.032	1.638	-0.424
STOCK	**-0.001**						**-0.002**	**-0.002**	**-0.028 ****						**-0.035 ****	**-0.039 *****
t-stat	-0.616						-0.687	-0.835	-2.024						-2.505	-2.892
CASH	**0.002**						**0.002*****	**0.004*****	**0.018**						**0.021***	**0.039****
t-stat	2.201						2.794	3.254	1.357						1.767	2.411
FRIENDLY			**0.003***				**0.003****	**0.003***			**0.005**				**0.005**	**0.007**
t-stat			1.819				2.054	1.942			0.416				0.482	0.689
RLTD		**-0.001**					**-0.002**	**-0.002**		**-0.022 ***					**-0.032 ****	**-0.034 *****
t-stat		-0.808					-1.047	-1.172		-1.708					-2.469	-2.685
FRxRLTDxnCASH				**-4.24E-05**								**-0.016**				
t-stat				-0.027								-1.174				
REL PREM 1						**0.001**		**0.0016**						**0.022**		**0.026***
t-stat						1.128		1.211						1.633		1.942
LG					**-0.001**			**0.002**					**-0.002**			**0.031***
t-stat					-0.551			1.483					-0.141			1.891

R SQ	0.044	0.007	0.038	0.000	0.004	0.016	0.103	0.137	0.089	0.039	0.001	0.021	0.000	0.040	0.167	0.252
ADJ R sq	0.016	-0.006	0.024	-0.014	-0.010	0.002	0.049	0.048	0.062	0.024	-0.012	0.007	-0.014	0.026	0.117	0.182
F stat	1.58	0.560	2.740	0.001	0.28	1.16	1.91	1.600	3.320	2.780	0.120	1.490	0.02	2.91	3.320	3.610
Nr of Obs	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71

Δ_nrEMPL denotes the differences in median matched firm adjusted number of employees per thousand pounds of sales between the 3-year post- and the 3-year pre-merger periods
Δ_EMPL_COSTS denotes the differences in median matched firm adjusted employee costs per sales between the 3-year post- and the 3-year pre-merger periods.
*** denotes significance at a 1% significance level using a two-tail test
** denotes significance at a 5% significance level using a two-tail test
* denotes significance at a 10% significance level using a two-tail test
Variable *STOCK*: takes the value of 1 if the mode of payment is stock and 0 otherwise; variable *CASH*: takes the value of 1 if the method of payment is cash and 0 otherwise; variable *LGXRLTD*: is the product of the dummy variable LG, which takes the value of 1 if the acquisition is large and 0 otherwise, and the dummy variable *RLTD* which takes the value of 1 if the acquiree and the acquirer operate in the same business line and 0 otherwise; variable *FRIENDLY*: it takes the value of 1 if the acquisition is friendly and 0 otherwise; variable *RLTDXnCash*: is the product of the dummy variable *RLTD* and the dummy variable nCash which takes the value of 1 if the transaction did not involve cash and 0 otherwise; variable RLTDXMIX: is the product of the variables RLTDand MIX; variable FRXRLTDXnCASH is the product of the variables *FRIENDLY, RLTD*, and *nCASH* and it takes the value of 1 If the acquisition is a Strategic one and 0 otherwise; variable *RELPREM*: takes the value of 1 if the acquiree was purchased at a premium and 0 otherwise (relative premium is defined as the value of the acquisition divided by the market value of equity of the acquiree as at the beginning of the year -1).

TABLE 27a – (Heteroscedasticity Corrected (White test))

OLS regressions of the change in the median matched firm adjusted number of employees per thousand pounds of sales and of the change in median employment costs per sales between the 3-year post- and the 3-year pre-merger periods on dummy variables that describe certain merger characteristics.

EQUATION	1	2
INDEPENTEND VARIABLES	**Δ_nrEMPL**	**Δ_EMPL_COSTS**
CONSTANT (a)	**0.003***	**0.06*****
t-stat	1.764	3.144
nCASH	**-0.005****	**-0.046*****
t-stat	-2.947	-3.158
FRIENDLY	**0.001**	**-0.006**
t-stat	1.126	-0.453
RLTD	**-0.003****	**-0.042*****
t-stat	-2.132	-3.701
FRxRLTDxnCASH	**0.003**	**0.025**
t-stat	1.26	1.341
R SQ	**0.104**	**0.112**
ADJ R sq	**0.05**	**0.058**
F stat	**1.92**	**2.08**
Nr of Observations	**71**	**71**

For the definition of the above dummy variables see Table 27, Chapter 8.

Δ_nrEMPL denotes the differences in median matched firm adjusted number of employees per thousand pounds of sales between the 3-year post- and the 3-year pre-merger periods

Δ_EMPL_COSTS denotes the differences in median matched firm adjusted employee costs per sales between the 3-year post- and the 3-year pre-merger periods.

*** denotes significance at a 1% significance level using a two-tail test.

** denotes significance at a 5% significance level using a two-tail test.

* denotes significance at a 10% significance level using a two-tail test.

Table 27a illustrates the effects of strategic mergers on the number of employees and employee costs, using both dummy and interactive variables. Strategic acquisitions do not have a significant effect on employment rates and employee costs. Acquisitions where payment involved stock exhibit labour efficiencies after the merger as well as related acquisitions. Friendly acquisitions seem to lead to a decrease in costs per employee but by a statistically insignificant rate. Both regressions were test for multicollinearity using tolerance, eigenvalues, condition index, and variance inflation factor. No effect of multicollinearity was detected.

8.5. Conclusions.

This Chapter discussed the effects of M&As on employment by examining the parameters of employee numbers and employment costs before and after the merger. Two approaches were used: a univariate approach where the benchmark that was used was the firms that belonged to the Industrial Levels of the Stock Exchange Year Book and for which data were available in Datastream, and a multivariate approach where a pair of matched firms for each target and bidder was used as a benchmark.

The results indicated that while the number of employees is at the industry levels in the pre-merger years, they decline after the merger below these levels by a statistically significant value. The median merging target and bidder exhibits fewer employee costs per sales than those of the median industry firm both in the pre- and the post-merger years.

Firms that engaged in acquisitions that were financed by stock and in acquisition that were financed by cash exhibited workforce utilisation efficiencies. Indeed, evidence from this study indicated for stock acquisitions, while employment rates remain at the pre-merger levels, employee costs decline after the merger. In cash acquisitions there is an increase in the number of employees but employee costs remained unchanged after the merger. Thus, both acquisitions that were financed by stock and acquisitions that were financed by cash are followed by lower costs per

employee. In friendly acquisitions jobs are increased after the merger while employment costs do not. In hostile acquisitions there is a decline in the employment rates but not in employee costs and when the target and the bidder belong at the same Level 5 Industrial Sector, there is a decline at employment costs but not in the number of employees.

In friendly acquisitions although more jobs were created after the merger, employee costs remained at the pre-merger standards in contrast to hostile acquisitions where despite the job cutting due to merger labour costs remained as at before the merger.

Strategic acquisitions did not exhibit any significant change either to the number of employees nor to the employee costs after the merger.

In large acquisitions while there is no statistically significant difference in the number of jobs between the post- and the pre-merger periods, there is evidence that employee costs increased, probably due to extensive restructuring that is needed for the integration of the target after an acquisition where target's size is equivalent to that of the bidder. This increase is observed after controlling for the effects of the method of payment, industry relatedness, whether the acquisition was friendly or hostile and whether the transaction closed at a premium. (regression 16, table 27) Where the acquirer paid a relatively high premium for the target, an increase in employee costs in the post-takeover period is observed after controlling for the above variables.

Finally, there is evidence from the univariate analysis that when a target is purchased at a relatively high premium the employment rates of the combined target and bidder in the pre-merger years are about at the same levels as those of the benchmark. However, employment rates fall below those of the benchmark's in the post-merger period.

CHAPTER 9.

DISCUSSION OF RESULTS.

9.1. Introduction.

The fundamental issue this study deals with is that of whether M&As create value for the engaging parties. The approach that was chosen to do so was the examination of operating cash flow return on market value of total assets of the combined entity for 3 or 5 years surrounding the year of merger completion. Two methodologies were applied; Healy's (1992) Regression Model and Ghosh's (2001) Change Model. To compare results with those derived by previous studies we used two alternative benchmarks for evaluating post-merger performance. The former was the relevant industry's performance and the latter was the performance of a pair of firms that were matched with the target and bidder on the basis of pre-merger performance, size and industry.

Three other primary questions are considered in this work. First, what was the performance of M&As that shared certain common characteristics; second, whether the stock market revaluation of the merging firms' assets at merger announcement reflects future changes in cash flow performance due to merger, and finally, what are the effects of M&As on employment.

The results of this research were presented in Chapters 6, 7, and 8, along with a brief discussion on their implications for the above issues. The aim of this chapter is to extend the analysis of the findings so as to get a deeper understanding of their meaning and their implications for M&As in the U.K.

The structure of this Chapter is as follows. In Section 9.2 we discuss the implications of the results concerning the performance of firms that engaged in M&As in the U.K. In Section 9.3 we discuss the implications of the results for the market for corporate control and for managerial objectives. In Section 9.4 we discuss the evidence on the post-merger performance of merging firms that share certain common characteristics. Section 9.5 deals with the evidence which concerns strategic acquisitions. In Sections 9.6 we discuss the results regarding operating performance

of firms that engaged in acquisitions where the acquirer paid a relatively high premium for the acquiree and in Section 9.7 the discussion is focused on the effects of the acquisition size on performance. In Section 9.8 we analyse the relation between merging firms' asset revaluation by the market at the time of the event announcement and the operating cash flow returns in the post-merger period, so as to evaluate the ability of stock markets to forecast post-merger performance. In Section 9.9 we analyse the effects of various types of M&As on merging firms' employment rates and employee costs, and finally in Section 9.10 a summary of the main results of this study is given.

9.2. The Change in Performance due to Merger.

The results in Chapters 6 and 7 indicated that merging firms underperform both their industry peers and firms that were matched to targets and bidders, on the basis of pre-merger performance, size and industry relatedness, in the post-merger years. This is in contrast to the pre-merger years where their performance was equivalent to that of the benchmarks[1]. On the other hand, the change in operating performance between the post- and the pre-merger years was negative and statistically significant when the performance of a pair of matched firms was used as a benchmark and negative but insignificant in the case where performance adjustment was made using the performance of the industry's firms. Moreover, the results from regression analysis (regressions 4.9 and 4.10) suggested that after controlling for the effects of pre-merger performance, merging firms suffered a deterioration in annual performance of 1.7% when operating performance was adjusted using industry median performance, and a decline in annual performance of 2% when the benchmark used was the performance of a pair of matched firms.

This evidence is supportive of that reported by Ghosh (2001) for mergers in the U.S. Using firms matched on performance, size and industry relatedness, Ghosh found no evidence that operating performance improves following acquisitions. On the other hand, our results are in contrast to those derived by Healy et.al. (1992) for

[1] In the case where pairs of matched firms are used as a benchmark, pre-merger performance of sample firms is equivalent to that of the benchmark at the year -1 from the definition of this research design.

the 50 largest acquisitions in the U.S. in the period from 1979 to mid-1984. Healy et.al. reported significant improvements in operating performance following acquisitions using industry firms as a performance benchmark.

As far as the U.K. evidence is concerned, the results of this study are consistent with those derived from studies focusing on profitability metrics (Utton 1974; Meeks 1977; Kumar 1984; Dickerson et.al. 1977). In these studies the authors report a significant decline in profitability following mergers. However, Chatterjee and Meeks (1996) and Cosh et.al. reported a modest increase in profitability after merger.

Studies that examined the operating performance of the U.K. takeovers were those by Manson et.al. (1994) and Powell and Stark (2005). Our results do not confirm the findings derived from these studies. Manson et.al. report an annual statistically significant increase in operating performance of 3.7% in the post-acquisition years. However, the relatively small size of their sample and the fact that the acquisitions under examination were clustered in a very short period of time might pose doubts about the generalisability of the conclusions. Moreover, while the authors addressed the problem of the possible distortion of the results when acquirers that took part in more than one acquisition are included in the sample, they only exclude those acquirers who took part in more than one takeover in an unspecified relatively short period of time surrounding the takeover under examination. However, the period for estimating operating cash flows extends from five years before the merger to five years after it with the year of the takeover being excluded. In addition, the authors report that they include only those acquisitions that constitute a single major strategic decision for the acquirer. It is not specified, however, when an acquisition is defined as strategic and most importantly how financial reports of an acquirer may have been affected by an additional acquisition which, although not a strategic one, is of a substantial size and takes place within the period of examination.

Powell and Stark's study for U.K. takeovers indicated some improvements in post-merger performance ranging from 0.13% per annum to a statistically significant 3.10% per annum, depending on the definition of cash flows and the deflator used in the two alternative methodologies for measuring post-merger performance (i.e.

Healy's et.al. and Ghosh's). This study also fails to deal with the issue of successive acquisitions that were made by the same acquirers. Moreover, the distribution of the takeovers in the sample of this study gives emphasis to takeovers that took place in the 1980's. Eighty percent of Powell and Stark's sampled takeovers occurred in the period from 1985 until 1989 and over 72% of the sample acquisitions occurred during the takeover boom period of 1985 to 1988. This might increase the possibility that some of the reported results are time specific to the period during which most of the sample acquisitions took place. Indeed, as discussed in Chapter 3, the period 1987-1989 was a typical period of expansion of U.K. companies through acquisitions and it is possible the motives and consequently the effects of takeovers differ between periods of peaks and troughs of merger activity. In addition, a greater percentage of takeovers were hostile in the 1980's than in the 1990's which is another possible factor that may lead to different effects of mergers between the two periods. Finally, since the 1980's competition policy has been more oriented towards considering the effects of takeovers on competition which may have altered the priorities and objectives of acquirers from the pursuit of rapid increases in profits through market power or increases in market share to the achievement of synergies and scale economies or to the expansion to newly emerged industries.

Therefore, Powell's and Stark's study, apart from failing to explain how the important issue of successive acquisitions by the same acquirers is dealt with, refers more to the corporate environment of the 1980's than that of the 1990's which is undeniably completely different. This may explain the differences in results between our study and that provided by the authors.

We tested this possibility by segmenting our sample into two sub-samples: one that included companies that were merged in the period from the beginning of 1990 to the end of 1993 and another that included the acquisitions completed in the period from the beginning of 1994 until the end of 1996. The former period overlaps with the final period under examination in Powell's and Stark's study. Indeed, the results (regressions 16, 17, 18, table 18, chapter 6) indicated that merging firms that were included in the period which Powell and Stark examined tend to perform better than our sample companies. This conclusion is unchanged regardless of the benchmark used for operating performance adjustment. This difference in operating

performance between the two sub-sets of the sample may also be due to the downturn is stock values which occurred in the period 1990-1992 and which may have affected upwards cash flow returns since the denominator reflects the market value of total assets.

9.3. Implications for the Market for Corporate Control.

The results produced for U.K. takeovers in this study, whether different from those derived from previous studies due to time specificity reasons or because of methodological drawbacks of these studies, carry interesting implications for M&A activity and for the market for corporate control in the U.K.

The evidence produced in this study suggests that the average outcome of M&As in the U.K. is negative. When Healy's model is employed, where post-merger performance is measured against pre-merger performance, the outcome of mergers is negative both when the combined operating cash flow returns are adjusted for the industry's performance and when they are adjusted for pairs of matched firms' performance (regression 1 in table 17 of chapter 6 and regression 1 in table 14 of chapter 7). When the Change model is employed, where it is supposed that there is no relation between post- and pre-merger performance, post-merger performance is measured against zero and the average outcome of M&As is also negative when performance is adjusted using the performance of pairs of matched firms. (panel B in table 1 of chapter 7).

Therefore, we can accept the interpretation that the U.K. market for corporate control is competitive, and hence, there is not a large number of profitable acquisitions left in the U.K. In other words, the existence of impediments to takeover in the U.K. corporate environment is weak making the outcome of a relatively large number of acquisitions negative or at best zero. As was discussed in Chapter 3, an active[2] and competitive market for corporate control implies that firms operate to their maximum level of efficiency and management teams act in accordance with shareholders' best interests. This, in turn, implies that most would-be target firms

[2] Franks & Mayers (1996) argue that the UK and U.S., unlike many other countries have active markets for corporate control. In 1985 and 1986 there were 80 hostile bids in the U.K.

have exhausted all possible opportunities for performance improvements and consequently few takeovers can offer new opportunities for further improvements.

Indeed, in the corporate environment of the 1990's impediments to takeover have loosened due to the rapid advancements in financial services and information technology. Financing an acquisition has become more feasible for a large number of potential acquirers because of the development of innovative financial products by investment banking. Information technology also made monitoring of a firm's internal operations more effective and has contributed to the wide dispersion of information about a firm's performance. These conditions are reflected in the evidence of this study. Our results do not support the prediction that capital constraints to takeover and information asymmetry about firms' performance create opportunities for a large proportion of profitable acquisitions. Moreover, the distribution of managerial capabilities and managerial objectives do not seem to be an important factor for the existence of a large number of profitable investment opportunities in the U.K. takeover market for corporate control.

The aforementioned advancements in monitoring and information technology have increased the take-over related discipline. Intensive monitoring, coupled with complicated management reward schemes can deter management from actions that may harm shareholders interests and reduce firm's efficiency levels. Incapable management teams can be replaced by other means than a takeover before a firm's efficiency levels decline dramatically so as the firm becomes a takeover target that offers opportunities for substantial performance improvements.

Notice, however, that the results could be open to other interpretations. One such interpretation is that competition in the market for corporate control is weak and managers are pursuing non-profit maximising objectives when acquiring other companies. A further possibility is that competition is weak and managers are pursuing profit maximising acquisitions as they expect to increase profits, but fail to do so. This may be due to poor planning or unexpected events. Our data does not allow us to distinguish between these possibilities.

Interestingly, unlike Healy et.al. (op.cit.) and Powell and Stark (op.cit.) we found that pre-merger performance does not explain much of the variation of post-merger performance (the coefficient (b) is statistically indifferent from zero in

regressions (4.9) and (4.10)). This implies that, on average, there are not temporary or permanent patterns in cash flows of the combined targets and bidders in the pre-merger years which persist in the post-merger period.

In summary, the results of this work suggest that M&As, on average, reduce performance regardless of the point of reference for performance comparison and the benchmark that is used. The decline in the average operating performance of the U.K. M&As implies that the U.K. market for corporate control is sufficiently competitive so there is not a large number of profitable opportunities to takeover.

9.4. The Performance of Merging Firms that share Common Characteristics.

While the main finding of this study is that M&As, on average, do not improve operating performance, there is a wide dispersion of returns among different types of takeovers. As expected, some factors differentiate deals and predispose them to success or failure (Bruner (2004)). The performances of acquirers exhibit different patterns depending on the method of financing the acquisition, whether the merger is a hostile or a friendly deal, and whether the target and the bidder operate in the same or similar industry or not. Finally, the most interesting finding of this study as far as which acquisitions are successful is concerned, is the performance behaviour of the Strategic takeovers.

9.4.1. Financing.

Our results provide some evidence that the mode of financing an acquisition has a significant impact on post-takeover performance, depending on the benchmark and the model used to measure performance. The operating performance of firms that used cash to acquire falls below the industry's standards in the post-merger period, while it is at industry levels in the pre-merger years. Stock acquisitions exhibit industry adjusted operating performance that is insignificantly different from zero in the 5-year pre- and the 5-year post-merger periods. The same is the case when the acquirer offered a choice between stock and cash to a target's shareholders (tables 2,

3, 4, 6 in chapter 6). However, the median industry adjusted difference in performance between the post- and the pre-merger periods is statistically insignificant regardless of the currency used to takeover.

When the benchmark for measuring a combined firm's performance is a pair of matched firms, matched on the basis of pre-merger performance, size and industry relatedness, both cash and stock acquisitions exhibit a performance which is equivalent to that of the control firms in the pre- and the post-merger periods. However, only the former exhibit a median change in adjusted performance between the post- and the pre-merger periods which is negative and statistically significant. Acquisitions that were financed by a combination of stock and cash perform worse than the pair of matched firm in the post-merger period and the change in the median adjusted operating performance between the years 2 and 3 and the year -1 is negative and statistically significant (tables 2,3,4, in Chapter 7).

The regression analysis indicated that cash acquisitions exhibit a statistically significant decline in annual performance in the post-merger years while stock and mixed acquisitions do not seem to explain much of the variation of post-merger performance once the effects of pre-merger performance are controlled for (regression 2, table 17, chapter 6).

Following Ghosh (2001), we regress the variable that denotes the median change in industry adjusted operating performance between the 3 years post- and the 3 years pre-merger periods against the 3 dummy variables that denote whether the acquisition was financed by cash, stock or a combination of them. The results indicate again that cash acquisitions exhibit a statistically significant decrease in annual industry adjusted operating performance[3]. The coefficients of the two other variables are statistically insignificant (regression 1, table 18, Chapter 6). Controlling for industry relatedness and whether the acquisition was friendly or hostile, stock acquisitions exhibit a statistically significant improvement in annual operating performance[4] (regression 14, table 18, Chapter 6).

[3] However, when the performance benchmark is a pair of matched firms the method of payment appears to have an insignificant effect on post-merger performance (regressions 2 and 1 in tables 14 and 15 respectively, Chapter 7)

[4] Also, regression 9 in table 14 of chapter 7 indicates that cash acquisitions exhibit a post-acquisition annual matched firm adjusted performance decline when we control for the effects of pre-merger performance, industry relatedness and whether the acquisition was hostile or friendly.

Our results do not confirm previous evidence reported by Powell and Stark (2005). These authors found that the method of payment does not have any significant impact on post-merger performance for U.K. firms. In the U.S., Ghosh (op.cit.) reports that cash acquisitions have a positive and significant impact on post-merger performance while stock and mixed acquisitions do not have any significant impact. However, after controlling for the effects of industry relatedness and whether the acquisition was hostile or friendly, Ghosh reports a significant and positive impact for stock and cash acquisitions. Healy et.al. (1992) also report that the mode of financing an acquisition does not have any significant post-merger impact on performance but in a later study (Healy et.al. (1997)) the authors report that stock acquisitions perform better than acquisitions that were financed by other means of payment.

In summary, the evidence provided from this work suggests that we can reject the hypothesis that cash acquisitions exhibit better performance than stock acquisitions in the U.K. It is interesting that the vast majority of share price studies provide evidence that when acquisitions are financed by cash acquirers' shareholders enjoy substantial gains at the time of the announcement[5] – an indication that capital markets very often capitalise an improvement in future performance when cash is the method of payment – while in stock acquisitions shareholders face significant losses[6]. Myers and Majluf (1984) suggest that managers issue stock to finance a takeover when they hold internal information that the stock is overvalued. Investors perceive stock financing as bad news and the takeover announcement returns may reflect both an anticipated decline in performance and the negative news about the acquirer's stock valuation. Therefore, assuming that markets are efficient, if an acquirers' share price decline at the announcement is an anticipation of a performance decline in the future then there should be lower cash flow returns for stock financed acquisitions than for cash financed acquisitions. The evidence of this study, however, is based on the actual post-merger performance of the combined entity and does not confirm this prediction. Thus, in efficient stock markets, the share

[5] This is despite the fact that in acquisitions that are financed by cash targets' shareholders are immediately tax liable while in acquisitions that are financed by stock tax liability does not occur until when targets' shareholders sell their shares.

[6] Rappaport and Sirower (1999).

price decline at the announcement of a stock acquisition is not necessarily a reflection of an actual future decline in performance.

A possible explanation of the evidence provided by our study is that stock acquisitions perform better than cash acquisitions, on average, because they represent strategic investment decisions. Most of the stock acquisitions in this study are agreed transactions between targets' and bidders' management[7]. Therefore, the operating performance of stock acquisitions reflects performance improvements that result from friendly transactions which are usually oriented towards the expansion of existing operations and the exploitation of scale or scope economies and synergies in contrast to hostile takeovers which represent aggressive investments that mainly aim to profit through the more efficient utilisation of a target's resources by a more competent or diligent management team or represent expansionary investments to new product markets[8]. Moreover, in agreed transactions the acquirer has a better insight about a target's internal operations and the cooperation between the two management teams is ensured by the risk sharing on the acquisition project that results from the exchange of stock. Stock is also considered as a 'cheap' means of payment since it mitigates the impact of any possible valuation errors. On the other hand, financing acquisitions by cash increases the possibilities that the acquirer may be deprived of the necessary cash to finance other more profitable projects. In addition, it is more possible for managers to use firms' available cash or debt capacity to proceed with acquisitions that serve their personal interests, instead of those of shareholders, in the way that the Free Cash Flow Hypothesis suggests, than when stock is the means of payment. Cash is also considered as a strong currency for financing an acquisition in the sense that any miscalculation about profit opportunities from the acquisition or wrong estimations in the projection plans or any failure to achieve potential synergies has a more severe impact on a firm's operating performance than when the acquisition has been financed by stock.

[7] As mentioned in Chapter 6 of this study 16 out of the 21 acquisitions that were financed by stock are friendly. Also, from the 18 hostile acquisitions that are included in the sample, 13 of them have been financed by cash or a combination of stock and cash.

[8] The majority of stock acquisitions, i.e. 11 out of 21, are characterised as related since the acquirer and the target operate in the same Level 5 Industrial Sector.

9.4.2. Attitude.

The preceding analysis is confirmed by the results that were produced in this study for friendly, hostile and related acquisitions. There is some evidence that friendly acquisitions perform better than hostile acquisitions and related takeovers outperform unrelated ones.

As illustrated in Chapter 6, the median industry adjusted operating cash flow return on assets of firms that were engaged in hostile acquisitions is negative and statistically significant in the 5-year post-merger period. Friendly acquisitions on the other hand exhibit performance which is at levels equivalent to those of their industry peers in the post-merger period. However, results from the Change Model indicate a statistically insignificant change in industry adjusted performance between the post- and the pre-merger periods. When the benchmark that is used for adjusting performance is a pair of matched firms hostile acquisitions exhibit performance which is around the matched firms' standards while friendly ones underperform the benchmark in the post-merger period. The results produced by the Change Model also indicated an insignificant change in performance between the post- and the pre-merger years for both hostile and friendly acquisitions. Univariate analysis, therefore, provides results that depend on the benchmark that is used to calculate performance.

We used regression analysis to examine the performance of friendly acquisitions after controlling for the effects of other variables that are associated with acquisition-related performance factors. Friendly acquisitions do not exhibit neither a performance decline nor of performance increase when the effects of the method of payment and industry relatedness are controlled for (regressions 9 and 11 in tables 14 and 15 respectively, in Chapter 7)[9]. Our results provide some evidence that firms that were engaged in friendly acquisitions exhibit better post-acquisition operating performance than firms that were engaged in hostile ones (regression 3, table 17 in Chapter 6). Therefore, we can reject the hypothesis that target management is on average inefficient and that hostile takeovers outperform friendly ones. This in turn, implies that, on average, targets' strategies are successful and their management efficient. Otherwise, the abandonment of targets' strategies and replacement of

[9] The results do not change when we control for the effects of pre-merger performance on post-merger performance (regressions 3, 9 in table 17 and 11, 12, 13, 14 in table 18, in Chapter 6)

existing management teams, which is the practice in hostile acquisitions, should lead to a better performance for hostile transactions.

This finding is consistent with the results that were discussed in the previous section regarding the competitiveness of the U.K. market for corporate control. A high degree of competition ensures that potential targets operate near their maximum level of efficiency and consequently there are not many opportunities for a large number of profitable acquisitions[10].

9.4.3. Industry Relatedness.

Unsurprisingly, acquisitions where the target and the bidder belonged to the same Level 5 Industrial Sector exhibit a significant annual increase in adjusted operating performance regardless of the benchmark that was used. Thus, we cannot reject the hypothesis that horizontal mergers create value.

As expected, economic benefits through the realisation of potential synergies or through the achievement of economies of scale and scope or because of an increase in market share are more likely to occur in mergers between firms that operate within the same or similar lines of business than in mergers between firms with unrelated business operations.

Diversification does not improve performance since it is a risky and costly procedure. As noted in Chapter 3, the financial synergies through the creation of internal capital markets and the strategy for balancing the investment portfolio of an acquirer are often the primary reasons for the justification of unrelated acquisitions. However, it is more likely that the allocation of resources within a diversified firm may be less efficient than the allocation which can be achieved through the stock markets when divisions operate as independent firms. Subjective criteria, personal feelings and internal lobbying may influence decisions for internal funding and reduce a firm's efficiency levels. Moreover, in unrelated acquisitions employee productivity can be lower than that of related ones since new owners who are unfamiliar with business operations may attempt to economize from lowering

[10] It should be noted, however, that even if potential targets operate at their maximum level of efficiency some mergers can produce economic benefits from the exploitation of potential synergies, or from economising on costs through scale or scope economies or through an increase in market power. This is more the case of Strategic acquisitions that will be discussed later in this Chapter.

employee benefits that are based on implicit or explicit contracts. This, in turn, may cause employees to hesitate to invest in the firm their firm-specific knowledge and consider leaving the firm if they receive less than what the external market offers for their firm-specific knowledge. Recruitment of new experienced labour would be very costly for the firm since they will be reluctant to invest in firm specific assets unless they are sufficiently compensated for the risk of not receiving quasi-rents in the future. Such situations could also be possible with other stakeholders of the firm like suppliers creditors or customers when relationships are based on implicit rather than explicit contracts. Therefore, long term efficiency of the firm may be reduced[11]. Our results indicated that unrelated acquisitions lead to a statistically significant performance decline (regressions 4 and 2 in tables 17 and 18 respectively, in Chapter 6, and regressions 4 and 2 in tables 14 and 15 respectively, in Chapter 7)

The question which arises then is that, if diversification destroys value what drives acquirers to conduct unrelated acquisitions? The answer is not simple since acquisitions motives are based in multifactor decision processes. In general, however, one could argue that acquiring firm's managers either overestimate their generic managerial capabilities – infected by a kind of 'hubris'[12] – or, take advantage of information asymmetries with shareholders and ignore shareholders' interests and conduct value destroying acquisitions to serve their own interests, ensuring higher bonuses and binding company's future with their expertise[13].

However, the 'hubris' hypothesis refers more to a management misconception about the future prospects of a dubious and possibly expensive acquisition than to the reasons for conducting it. The evidence from past studies (Amihud and Lev (1981); Donaldson and Lorsch (1983); Morck et.al. (1990)) and from this work give is consistent with the hypothesis that badly performing unrelated acquisitions occur because the acquiring management team is pursuing its private interests. Managers may be keen to enter new lines of business in order to assure the

[11] Indeed, the results that were illustrated in the previous chapter indicated that employee costs decline in the post-merger period in related acquisitions while they remain around benchmark's standards in unrelated ones.

[12] This is not to say that managerial hubris could not be a driving force behind related acquisitions. However, in this case other motives like the pursue of synergistic gains from expanding in a familiar industry justifies their choice and it is the challenge of the synergy realisation that will determine the success or failure of the investment. Valuation errors on behalf of acquirer's management may well exist, but their expectations can materialise to the degree that synergistic gains more than offset acquiring management's valuation mistakes. Therefore, in unrelated acquisitions hubris can be identified more straightforwardly.

[13] Such actions may also include anti-takeover 'poison-pills' which are costly to shareholders and make it harder to remove managers.

survival and continuity of the firm even when shareholder wealth maximisation dictates shrinkage or liquidation of the firm. Moreover, when managers consider an acquisition they evaluate both the net present value of their own benefits and the wealth effects to the owners. When the former are adequately served by an acquisition that increases job security or increases rewards then they may be willing to lose the criteria of considering the attractiveness of an acquisition to shareholders. Our results are also consistent with the Free Cash Flow Hypothesis; unrelated acquisitions represent negative net present value projects decided by the acquirer's management in order to increase their job security and to possibly bind their expertise with the firm's future by disposing free cash flow to acquire new business rather than to return it to shareholders.

Our results are not consistent with those derived by Ghosh (op.cit.). Ghosh reports a statistically significant decline in annual operating performance of 6.13% for related acquisitions after controlling for the effects of the method of payment and whether the acquisition was friendly or hostile. On the other hand, the results reported by Healy et.al.(op.cit.) are confirmed by our results since the authors found that acquisitions with a high degree of business overlap between targets and bidders show significant post-merger improvement, whereas other types of mergers do not.

Powell and Stark (op.cit.) report that industry relatedness does not have a significant explanatory effect on post-merger performance when performance is measured as the adjusted[14] cash flow returns on total market value of assets. Both Healy and Ghosh report an insignificant impact of friendly acquisitions on post-merger performance while Powell and Stark report that disciplining[15] acquisitions have a statistically significant positive impact on post-merger performance only when operating profits adjusted for short term accruals are deflated by the book value of assets or the total sales and when the benchmark for the performance adjustment is the median performance of the respective industry. In all other cases disciplining acquisitions had an insignificant impact on performance. The difference in results

[14] This finding does not change regardless of the benchmark used to adjust operating cash flow returns on total assets. The authors report a negative and significant impact of industry relatedness on cash flow performance when operating profits are deflated by the book value of assets. However, this measure of performance is not indicative of the actual performance of the firm since the book value of assets represents more an accounting measure rather than the real value of the assets.

[15] The authors define an acquisition as disciplining when it results in the removal of the target Chief Executive Officer.

concerning related acquisitions between our study and that by Powell and Stark could possibly be due to different definitions used for industry relatedness. Related acquisitions in our study are defined as those where the target and the bidder belonged to the same Level 5 Industrial Sector, while Level 4 Industrial Sector was that used by Powell and Stark. However, using Level 4 Sectors to measure industry performance may be problematic for some sectors in some years since there may exist very few firms included in these sectors. Moreover, as mentioned earlier in this study the authors do not report how they treated the change in industrial classification that took place in 1992. Some firms that belonged to a specific sector in 1991, belonged to a different one in 1992 without changing their operations; this happened just because the definition of industrial sectors changed. Therefore, unless such changes have been taken into account, the results may be biased.

The analysis of the empirical evidence of this study so far, has indicated that the U.K. M&As, on average, reduce operating performance. However the profitability of individual transactions varied widely. Some mergers perform better than others and this finding has been associated with specific merger characteristics. Stock acquisitions perform better than cash acquisitions and there is some evidence that if the method of payment includes both stock and cash performance is better than if only cash is used to finance the acquisition. Moreover, industry relatedness has a positive and significant impact on merger performance and hostile and unrelated acquisitions lead to performance deterioration. There is also evidence that friendly acquisitions do not lead to performance deterioration.

9.5. Strategic Acquisitions.

We examined the impact on post-merger performance of acquisitions that were financed by a means of payment other than cash, the transactions were friendly and the target and the bidder operated in the same Level 5 Industrial Sector. These transactions were characterised as 'Strategic' in this work. We identified 29 Strategic takeovers in the sample and we estimated regression (4.9) including a dummy variable that takes the value of '1' when the acquisition is a Strategic one and the value of '0' otherwise (regressions 7 and 8, table 17, in Chapter 6). The coefficient of

the dummy variable indicated an increase in industry adjusted annual operating performance of 3% for Strategic acquisitions after controlling for the effects of pre-merger performance (which were statistically insignificant). The intercept coefficient which captures the effects of all other acquisitions in the sample on post-merger performance indicated a significant decline in annual performance of 2.8%. Similar results are produced when regressing the median change in industry adjusted operating performance between the 2, 3 and 5 post- and the 2, 3, and 5 pre-merger periods respectively against the dummy variable that indicated that an acquisition is Strategic (regressions 8, 9, and 10 in table 18 in Chapter 6). The results remain almost the same when the benchmark for adjusting the combined firm's performance is a pair of matched firms[16].

Therefore, we accept the hypothesis that the U.K. Strategic acquisitions outperform other types. Our results are consistent with those produced by Healy et.al. (1997) for the U.S. The authors report that the estimated dummy coefficient in regression (4.9) was 5% and statistically significant and that Strategic acquisitions produced greater synergies than the financial transactions did.

The reasons for the superior performance of Strategic acquisitions are associated with their specific characteristics as they were discussed above, separately for friendly, related and stock acquisitions. Strategic deals avoid the disruption of organisational operations, the replacement of incumbent management and the abandonment of ongoing projects and policies which are associated with hostile acquisitions. Moreover, since they are friendly negotiations key managers are retained and the absorption of the acquired firm is easier, while mid and lower management is more likely to be cooperative because established implicit and explicit working contracts can continue to exist. Negotiations before the acquisition allow acquirers to get a better insight about internal operations of the target and the possibilities for valuation errors are reduced. Additionally, Strategic acquisitions are deals between firms with identical or similar operations and so can benefit from scale

[16] After controlling for pre-merger performance Strategic acquisitions exhibit a statistically significant increase in median annual matched firm adjusted operating performance of 3.9% (regressions 7 and 8, table 14, in Chapter 7). The regressions in which the dependent variables are the median change in matched firm adjusted operating performance between the 2 and 3 post- and the 2 and 3 pre-merger periods respectively and the independent variable is the dummy variable that indicates when an acquisition is a Strategic one indicated statistically significant annual increases in performance of 3.9% and 4.7% respectively (regressions 8, and 9, table 15, in Chapter 7).

economies synergies and a mutual understanding of businesses between the acquirers and the acquirees. The combined entity also has the necessary cash available for restructuring or for other investments since the acquisition has been financed (entirely or partly) by stock.

The empirical evidence for Strategic acquisitions in this study supports the interpretation that the U.K. market for corporate control appears to be competitive. Unless there are opportunities for exploitation of economies of scale or an increase in market share which are achieved with the increase of a firm's size, and a knowledge of a target firm's operations which is possible when the target operates in familiar businesses, and the acquisition occurs after negotiations, there are not many opportunities for a large number of profitable takeovers.

Moreover, according to the economic theory, when markets are reasonably competitive players will earn a normal rate of return. This is also true for the market for takeovers, especially for corporate environments such as those of the U.K. and the U.S.[17]. An acquisition's benefits can easily be replicated by competitors who will not stand idly by, while an acquirer attempts to generate synergies at their expense[18]. Only those acquisitions that can achieve a sustainable competitive advantage will bring permanent improvements in performance within competitive markets, and this seems to be the outcome of Strategic acquistions.

9.6. Acquisition Premium.

In this study we attempted to identify the possible factors which differentiate bad deals from good deals since there is a wide dispersion of outcomes from different types of takeovers.

As far as the price over the intrinsic value of a target (the premium) that was paid by an acquirer is concerned, our results are mixed. The univariate analysis indicated that when an acquirer paid a relatively high premium for the acquiree the united entity underperforms control firms in the post-merger years regardless of the

[17] The market for corporate control seems to exist mostly in the U.S. (Morck et.al. (1988), Bhide (1989), Martin and McConnell (1991)) and in the U.K. (Firth et.al.(2001)).

[18] It is not surprising then that research evidence suggests that mergers occur in waves within industries. First movers may attempt to strengthen their positions in industries which face technological or economic transformation and competitors follow in order to sustain and increase their market share.

benchmark used to adjust performance. Moreover, the median change in industry adjusted (as well as in matched firm adjusted) operating performance between the post- and the pre-merger periods is negative and statistically significant. Acquisitions that were closed at a discount exhibited a performance that was equivalent to that of the control firms and the median change between the post- and pre-merger periods was indistinguishable from zero.

This could possibly imply that when an acquirer proceeds with a takeover to increase competitive advantage and reap synergistic gains from a more efficient use of a target's resources, then, more value is added to the united entity when the purchase is made at a discount than when it is made at a relatively high premium. Furthermore, a purchase at a discount may indicate strong negotiation skills on behalf of the acquirer's management and alignment to shareholders' interests.

However, the regression analysis indicated that industry adjusted post-acquisition performance is not explained by whether the acquirer purchased the target at a relatively high premium or not, once we control for the effects of the industry adjusted pre-merger performance (regression 10, table 17, Chapter 6). Moreover, whether the acquisition was closed at a premium or not does not explain much of the variation of the median change in operating performance between the years 2 and 3 and the year -1 (regression 3, table 18, Chapter 6). Similar results were produced when the benchmark for performance adjustment was a pair of matched firms (regression 10, table 14, chapter 7).

Therefore, the findings from regression analysis indicated that, on average, there is no relationship between post-merger performance and whether the acquirer paid a relatively high premium for the target.

9.7. Acquisition Size.

In Chapter 3 we hypothesized that large acquisitions perform better than other acquisitions. The results produced in this study confirm this prediction. The univariate comparisons do not suggest that the prediction can be supported, but they do suggest that the operating performance of small acquisitions deteriorates. However, in regression (4.9), when we included a dummy variable that takes the

value of '1' when an acquisition is characterised as large and the value of '0' otherwise, the relative size of target and bidder can explain post-takeover performance once pre-takeover performance is controlled for. The coefficient of the dummy variable is 0.022 and statistically significant denoting an increase in industry adjusted annual operating performance of 2.2% when the takeover is large. The intercept coefficient is -0.028 and statistically significant indicating a decrease in annual post-merger performance for all other acquisitions of 2.8%. The regression using the Change Model indicated for large acquisitions a positive change in median performance between the 5-year post- and the 5-year pre-merger period which, however, was statistically insignificant. The intercept coefficient was negative and statistically significant indicating that all other acquisitions exhibited a performance decline in the 5 post-merger years (regressions 11 and 4 in tables 17 and 18 respectively, Chapter 6)[19].

Therefore, there is evidence from the regression analysis that large acquisitions in the U.K. perform better than other acquisitions. In addition, there is evidence that large acquisitions perform as well as the benchmark firms both in the pre-and the post-merger years, while small ones underperform the benchmark in the post-merger years regardless of the choice of the control firms (tables 14 and 15 in Chapter 6 and tables 12 and 13 in Chapter 7).

When a large acquisition is carried out by a relatively large acquirer operating performance is above benchmark standards both in the pre- and the post-merger periods[20]. This may indicate that relatively large firms that make large acquisitions are efficient and profitable firms with a diligent and competent management who undertake well-balanced takeover decisions for profitable targets. This implies that the main aim of such acquisitions is not simply to manage a target's resources more efficiently, but to increase value from the combined operations. However, it needs further research to identify whether the pre-merger superior performance is mainly

[19] When the performance benchmark was a pair of matched firms, large acquisitions did not exhibit a performance improvement but all other acquisitions exhibited deterioration in annual post-acquisition performance once the effects of pre-acquisition performance are controlled for (regression 11, table 14, Chapter 7).

[20] Taking the 19 largest acquirers from the sub-sample of the 38 largest acquisitions the post-merger industry adjusted operating performance is positive and statistically significant which means that the combined firms outperform their industry peers. The combined target and bidders outperform their industry peers in the pre-merger period as well.

attributable to the target or the bidder since our pro-forma data reflect only the combined pre-merger operations.

The evidence that is provided from the results suggests that when potential synergies exist and the cost economies are feasible then the larger the size of the acquisition the higher the performance improvements that can be observed. Successful small acquisitions will produce performance improvements that are negligible relatively to the acquirer's size.

Previous results of this study provided some indications that the U.K. market for corporate control is competitive. Therefore, takeovers that aim to make more efficient use of a target's resources due to improved management efficiency would not have many chances for performance improvements since in a competitive market for corporate control firms operate near their maximum level of efficiency. Consequently, a possible source for performance improvements would be an increase in market share or the exploitation of scale economies and synergies. These benefits are more likely to be observed when mergers occur between firms that operate within the same industry. Indeed, evidence from this piece of research indicated that related acquisitions lead to a statistically significant performance improvement while unrelated acquisitions are followed by a performance decline. Therefore, it was expected that large acquisitions between firms that operate within the same Level 5 Industrial Sector will produce greater benefits than other acquisitions.

To test this prediction, we included a dummy variable in regression (4.9) which took the value of '1' when an acquisition was large and between firms that operated in the same industrial sector and '0' otherwise. After controlling for the pre-merger performance the dummy variable was found to explain much of the post-merger performance. The coefficient of the dummy variable was 0.029 (the respective coefficient for large acquisitions was 0.022) and statistically significant indicating an increase in annual operating performance for large and related acquisitions of 2.9%. The intercept coefficient which captures the effects of all other acquisitions in the sample after controlling for the pre-merger performance was found to be -0.026 and statistically significant. Employing the same dummy variable as an independent variable and using the Change Model with the dependent variable being the median change in industry adjusted operating performance between the 5-

year post- and the 5-year pre-merger periods, we found that large and related acquisitions are followed by a performance increase of 4.1% which is statistically significant while the change in performance of all other acquisitions (which is captured by the intercept coefficient) is -3.3% and statistically significant (regressions 12 and 5 in tables 17 and 18 respectively, in Chapter 6)[21].

Therefore, we conclude that performance improvement effects for large acquisitions are amplified when the target and the bidder operate within the same industry.

Our results do not agree with those of Powell and Stark (op.cit.). Those authors report that the relative size of target and bidder can explain post-takeover performance once pre-merger performance is controlled for. However, they found a statistically significant negative relationship between post-takeover performance and the size of the acquisition (-1.1%) only when the operating performance deflator is the total market value of assets unadjusted for the assets revaluation at the period of the merger announcement, and when the operating performance deflator is the book value of assets. When the total market value of assets, adjusted for the assets revaluation at the period of merger announcement is used as deflator, the authors report an insignificant effect of size on performance. Moreover the authors do not report any results regarding the size effect on post-takeover performance using the Change Model[22]. Healy et.al. (op.cit.) also report that size does not explain cross-sectional variation in post-merger performance. However, it should be noted that the authors in their study include only the 50 largest acquisitions in the U.S. in the period of examination. Therefore, any systematic differences between large and small acquisitions could not be revealed due to the nature of their sample.

[21] Similar results are produced when using a pair of matched firms on the basis of pre-merger performance, size and industry relatedness for each combined target and bidder. The coefficient of the dummy variable is -0.041 once pre-takeover performance is controlled for, while the intercept coefficient is -0.034 both statistically significant. The Change Model produces significant results only when the dependent variable is the median change between the years 2 and 3 and the year -1. The coefficient of the dummy variable is 0.062 and the intercept coefficient is -0.059 both statistically significant.

[22] Actually the authors report results that are derived from the Change Model using only a univariate analysis which refers to their entire sample. Moreover, findings that would be produced from the Change Model if the analysis would be applied to alternative sub-samples are ignored.

9.8. The Market Revaluation of Assets and Cash Flow Returns.

As discussed in Chapter 3, one of the major controversies in academic discussion about M&As is the contradictory evidence about their profitability from different types of research. On average the short-term share price studies support the view that M&As are profitable and that stock markets capitalise anticipated future improvements in the period of the event announcement, while much of the evidence that comes from long-term share price studies and from ex-post accounting studies suggests that acquirers suffer losses in the years following the merger completion. However, in efficient stock markets investors would capitalise future expected changes in cash flows and any improvements or deterioration in post-merger operating performance should be reflected on the stock price of merging firms. The contradictory evidence between the different types of research would either suggest that this is an indication that stock markets do not have the ability to precisely forecast the changes in cash flows that are attributable to merger or that markets correctly forecast the anticipated changes in operating performance due to merger but in the period of the target's integration other factors than that of the merger may affect performance.

To test whether the abnormal returns of the market value of equity at merger announcement can be explained by post-merger cash flow return on assets, following Healy et.al. (1992), we run regression (4.13) to re-examine this issue using data from our sample which refer to U.K. takeovers in the first part of the 1990's. The dependent variable in regression (4.13) is the annual median industry adjusted operating performance of the sample companies in the post-merger years (*IAOPpost*) and the independent variable is the cumulative daily abnormal market adjusted returns of the total market value of the combined assets of the target and bidder (*WCMARA*) from 10 days before the event announcement to the date of merger completion[23]. In regression (4.13) the coefficient of (*WCMARA*) represents the association between the expected performance changes from takeovers and the actual operating performance changes post-takeover once pre-merger performance is controlled for. If the stock market correctly forecasts and capitalises future changes

[23] i.e. the date that the event went unconditional.

in performance, then we should observe a positive and significant relationship between the two variables; i.e. the coefficient of the variable would be positive and statistically significant.

Indeed, the results from the regression revealed a positive and statistically significant relationship between the actual post-merger operating performance and the market revaluation of assets in the period from 10 days before the event announcement to the date of the event completion. The coefficient of the variable (*WCMARA*) is 0.064 indicating that the stock market anticipates operating improvements which are capitalised with a pre-tax discount rate[24] of 6.4%. Pre-merger performance does not have any statistically significant effect on post-merger performance. The intercept coefficient is negative and statistically significant (-0.021).

Table 1 shows the mean of the daily cumulative abnormal asset (equity) returns for the target and the bidder and for the combined firm.

TABLE 1

Cumulative daily market-adjusted[25] equity (assets) returns measured from 10 days before the announcement to the date of the merger completion.

	TARGET MEAN	BIDDER MEAN	COMBINED MEAN
Abnormal equity returns	0.297***	0.052*	0.093***
Abnormal asset returns	0.282***	0.043	0.08***
IAOPpost			-0.016**
IAOPch5			-0.019*

Abnormal asset returns are computed from equity returns in the period of the announcement to ensure comparability of the anticipated changes in performance and the measured changes in cash flow return on assets. Abnormal asset returns can be defined as the weighted average of returns to debt and equity (Healy et.al. (1992)). Assuming that the value of debt does not change around the acquisition announcement (Kim and McConnel (1977)) abnormal asset returns equal abnormal equity returns times the equity to assets ratio. The combined equity (asset) return is a weighted average of the target and the bidder equity (asset) returns where total market value from the year prior to takeover is used to calculate the weights (see formulae 4.12. in Chapter 4) *, **, * denote significant difference from zero using a two-tailed test at the 1%, 5%, and 10% significance levels, respectively.**

[24] Since (*WCMARA*) is the capitalised value of future cash flow return improvements and *IAOPpost* is the pre-tax cash flow return improvement per year, the coefficient of (*TCHMV*) represents the pre-tax capitalisation rate.

[25] The Financial Times All Share Index was used as a proxy for movements in the market. In Chapter 4 we described the procedure by which we adjusted the returns (formulae 4.11).

Consistent with the existing evidence, the mean of the cumulative daily equity abnormal returns in the period of the event announcement is 29.7% for the targets, 5.2% for the bidders and 9.3% for the combined firm, all statistically significant. The respective figures for the market revaluation of asset are 28.2%, 4.3%, and 8%. Thus, the stock market anticipates improvements in operating performance after merger.

However, in light of the results referring to post-merger operating performance that were derived from this study it could be argued that the stock market reacts optimistically to the prospect of the merger. The mean annual industry adjusted cash flow return on assets of the combined firms is – 1.6% and statistically significant. However, regression (9.1) suggests that given pre-acquisition industry adjusted cash flow, a positive expectation about the direction of the future share price is positively correlated with post-merger industry adjusted cash flow. In other words, given a level of pre-acquisition industry adjusted cash flow, an increase in optimism by the market is positively correlated with an increase in industry adjusted post-merger cash flow.

$$IAOP_{post} = -0.021^{***} + 0.048 IAOP_{pre} + 0.064^{*} WCMARA \quad (9.1)$$

$$(-3.023) \qquad (0.048) \qquad (1.827)$$

The market's optimism at the announcement of acquisition event is more clearly observed from regression (9.2). Following Ghosh (2001), the dependent variable here is the cumulative daily market-adjusted abnormal asset returns of the combined targets and bidders and the independent variable is the median change in industry adjusted operating performance of the combined targets and bidders between the 5-year post- and the 5-year pre-merger periods.

The coefficient of the independent variable is positive (0.17) but statistically insignificant while the intercept coefficient is positive (0.083) and statistically significant[26]. The results of the regression suggest that in the absence of any change

[26] As can be seen in Tables 14 and 15 of Chapter 7 the results from regressions (13) and (18) respectively are not different when we use a pair of matched firms on the basis of pre-merger performance, size, and industry relatedness for each combined target and bidder as a performance benchmark to calculate the adjusted operating performance of sample firms.

in industry adjusted operating performance between the post- and the pre-merger periods, the daily cumulative market adjusted abnormal asset returns of the combined firm would be 8.3% (a figure which is statistically significant) indicating that the market behaves optimistically at the announcement of a takeover even if there are no post-merger improvements. In other words, the stock market revaluates upwards the combined assets just because of the event announcement. The relation, however, of the dependent and independent variables is positive indicating that any improvements in cash flows in the post-merger years would cause an increase in cumulative asset abnormal returns above the 8.3%. The market capitalises expected improvements for the sample companies in post-merger operating performance using a discount rate of 1/17%, i.e., a discount rate which equals an annual rate of 5.88%. However, this coefficient is not statistically significant so cannot be generalise for all U.K. acquisitions.

$$WCMARA = 0.083^{***} + 0.17 IAOPch5 \quad (9.2)$$
$$(4.381) \qquad (0.728)$$

Our results agree with previous evidence for the U.S. that is provided by Healy et.al., who report a statistically significant correlation between abnormal asset returns at the announcement and annual industry adjusted cash flow returns in the post-merger years once the effect of pre-merger performance is controlled for. The authors, however, found improvements in post-merger operating performance which can explain the change in the market value of assets around the announcement with no indication that stock market reacts optimistically at the announcement. The results from regression (9.2) are also consistent with those reported by Ghosh for the U.S. Ghosh reports a positive but insignificant coefficient for matched firm adjusted operating performance in regression (9.2).

Evidence for the ability of the stock market to predict post-merger performance for the U.K. is provided by Powell and Stark (op.cit.). The authors applied regression (9.1) using alternative cash flow definitions, benchmarks, and operating returns deflators, to conclude (p.314) that their findings '*taken at face value offer little comfort that the market has much ability to predict improvements in post-takeover performance*'. However, when they used an industry adjusted cash

flow return metric similar to that which was used in our study, their results are consistent with those that are reported here[27]. Manson et.al. (1994) also report a positive and statistically significant relationship between the market's assessment of post-acquisition performance at the announcement and industry adjusted operating cash flow return on the market value of total assets in the post-merger years.

Overall, our findings indicate that the market has the ability to forecast post-merger operating performance once pre-merger performance is controlled for. There is a positive and statistically significant relationship between post-acquisition operating performance and abnormal asset (and equity) returns at the announcement. However, there is a degree of optimism by the market in the period from 10 days before the event announcement until the day of the merger completion. The stock market agents perceive the prospect of a takeover as good news and initially revaluate the combined firm's assets upwards just because of the event. In the case where the effects of pre-merger performance are not controlled for, the change in operating performance between the post- and the pre-merger periods is still positively correlated with abnormal asset returns at the announcement but the relation is not statistically significant. The respective regression indicates that even in the absence of cash flow improvements the market offers a premium of 8.3% for the combined firm's assets because of increased optimism. This last finding provides not much comfort that the market forecasts post-merger performance with much precision.

9.9. The Employment Effects of Mergers.

The results of this study provide some evidence that there is a decline both in the number of employees per thousand of sales and in employee costs per sales following the merger. The benchmark adjusted number of employees per thousand pounds of sales is close to zero in the pre-merger period while it is negative and statistically significant in the entire post-merger period. Thus, merging firms, on average, seem to employ fewer employees per thousand pounds of sales after the

[27] The authors also report that when an *accrual* definition of cash flow was used the relationship between post-acquisition performance and the market revaluation of assets at the announcement is even stronger.

merger than they employed before it, relative to their industry peers. However, the median change in the number of employees per thousand pounds of sales for the combined firm between the 3 post- and the 3 year pre-merger years though negative is statistically insignificant, indicating a decline for the sample companies which nonetheless cannot be generalised for the population of mergers.

Employee costs per sales for merging firms are below those of their industry peers both in the pre- and the post-merger period. The median change in labour costs per sales for the combined targets and bidders between the 3 year post- and the 3 year pre-merger periods is negative indicating a decline in labour costs. However, again the figure is statistically insignificant.

Therefore, the average outcome of mergers indicates some improvements as far as the number of employees per thousand pounds of sales is concerned, while employee costs per sales do not seem to improve substantially. Nonetheless, the evidence is not strong enough to argue that M&As, on average, are followed by a more efficient utilisation of the workforce and a reduction in labour costs.

As in the case of operating performance there is a wide dispersion of results concerning the issue of employee utilisation efficiencies and labour costs improvements depending on the type of the acquisition.

Acquisitions that were financed by cash are followed by an increase in the number of employees as resulted from regression (1) in Chapter 8 (table 27). Other types of payment do not seem to have any explanatory power on the median change in the number of employees between the 3 year post- and the 3 year pre-merger periods. However, stock acquisitions are associated with lower employee costs while in cash acquisitions employee costs remain unchanged (regression 9, table 27 in Chapter 8) after the merger despite the increase in the number of employees. Therefore, following cash acquisitions the combined entity employs more employees with the same costs as in the pre-merger period, while following stock acquisitions the combined entity employs the same number of employees as in the pre-merger period with less labour costs. Consequently, both acquisitions that were financed by cash and acquisitions that were financed by stock are followed by lower costs per employee; the difference is that, in the case of cash acquisitions the number of employees increases while in stock acquisitions the labour costs decline. Thus, we

can reject the hypothesis that cash acquisitions offer a greater disciplinary motive for a more efficient employee utilisation and greater labour cost economies than stock and mixed acquisitions[28].

Consistent with expectations, hostile acquisitions appear to lead to greater employment losses than friendly ones (regression 3, table 27, Chapter 8). This supports the hypothesis that it is easier for the new management team to reorganise operations without considering explicit or implicit contracts with existing employees since it has not yet developed the necessary ties with them. Moreover, hostile acquisitions are assumed to be an instrument for diverting resources to more talented or diligent management. Thus, hostile acquisitions are followed by a greater degree of rationalisation in the utilisation of the workforce. However, it is interesting that the reduction in the number of employees after hostile acquisitions is not accompanied by a reduction in labour costs (regression 11, table 27, Chapter 8). This implies that the disruption in a firm's operations and the feeling of insecurity on behalf of employees which are typically associated with hostile acquisitions, may cause labour costs not to decline despite the decrease of the workforce; the firm may need to recruit some new expertise in the place of the existing employees who either no longer have interest in investing their firm-specific knowledge in the firm or their positions have been abandoned by the new management. In this process, new employees are likely to demand more remuneration to invest their expertise in the firm so as to be compensated for the risk of losing their jobs in the future[29].

Labour costs decrease in related acquisitions while the number of employees do not change significantly. This is not surprising, since the increased size of the united firm may allow for a reorganisation after the merger so as to take advantage of technological innovations and automation of some operations which may lead to the replacement of the existing experienced workforce with cheaper, and consequently,

[28] In the univariate analysis mixed acquisitions were found to exhibit the greatest labour utilisation and labour costs efficiencies. However, in that case the comparison was based not on the change in the number of employees and the labour costs between the post- and the pre-merger periods but on what employment rates and labour costs the combined firm exhibited before and after the merger relatively to the benchmark. Because the benchmark used in the multivariate approach controls for more variables we assume that these results are more robust than those derived from the univariate approach.

[29] In Chapter 8, the analysis of the annual median industry adjusted number of employees indicated that the number of employees remained at benchmark's levels before and after hostile acquisitions and below benchmark's levels after friendly ones. However, the comparison here is made on the basis of the change between the post- and the pre-merger years, and moreover, the benchmark that is used is more precise. Thus, we assume the results that are taken from the regression analysis as more reliable.

to lower costs per employee. These findings stand in contrast with the evidence provided by Conyon et.al. (2005) that wages increase after related acquistions and that hostile acquisitions lead to greater employee utilisation efficiencies.

The relative size of the acquisition seems to explain changes in employee costs per sales (but not in the number of employees) only after controlling for other variables that represent factors associated with the merger (regression 16, table 27 in Chapter 8). The results suggest that there is a statistically significant increase in the labour costs per sales in the post-merger years, after controlling for the effects of the method of payment, the industry relatedness, whether the acquisitions was friendly or hostile, and whether a relatively high premium was paid. The effect can be associated with specific merger characteristics. Thus, the median labour costs decline in the post-merger years for stock acquisitions, while in cash acquisitions there is a statistically significant increase. When the target and the bidder operate in the same Level 5 Industrial Sector, the median employee costs decline in the post-acquisition period. Contrary to our expectations, labour costs increase in acquisitions where a relatively high premium was paid for the target.

When considering for the effects of acquisition size on the number of employees per thousand pounds of sales after controlling for the effects of the method of payment, the industry relatedness and whether the acquisition was friendly or hostile, and whether a relatively high premium was paid, we found that large acquisitions do not exhibit any difference in the median control firm adjusted value (regression 8, table 27, in chapter 8). When we control for size (consistent to the results we discovered so far) we find that where a relatively high premium is paid there is a statistically insignificant increase in the adjusted number of employees per thousand pounds of sales. Cash acquisitions are followed by a statistically significant increase in the number of employees per thousand pounds of sales in the post-merger years. Stock acquisitions exhibit an insignificant decline in employment rates while in friendly acquisitions there is a statistically significant increase in the median number of employees per thousand pounds of sales. Related acquisitions seem not to have a significant explanatory effect on the change in employment rates between the post- and the pre-merger periods.

Overall, our results provide some evidence that in the U.K. merging firms employ fewer employees in the years following the acquisition relative to the median industry firm. Employee costs appear to decline in the post-acquisition years for the sample companies. Stock acquisitions are followed by a decline in employee costs while the number of employees remains unchanged. In cash acquisitions the number of employees increases in the post-acquisition period while employee costs do not change. Hostile acquisitions lead to job reductions but not to the elimination of employee costs, and, finally, industry relatedness appears to be a determining factor explaining the reduction in employee costs in the post-acquisition years but it does not appear to affect the employment rates. The relative size of the acquisition has a positive and statistically significant relationship with the median change in control firm adjusted employment costs per sales between the post- and the pre-merger periods only after controlling for the effects of the above variables. Whether the transaction closed at a relatively high premium does not appear to affect the post-merger employment rates. Employee costs, however, increase after controlling for the effects of the method of payment, industry relatedness, whether the acquisition was friendly or hostile, and the relative size of the acquisition.

9.10. Conclusions.

The empirical evidence of this study demonstrates that M&As in the U.K. are, on average, performance deteriorating investments or at best, have no effect on performance, depending on the methodology that is applied to measure performance. This implies that the U.K. market for corporate control is competitive. Our results do not confirm previous evidence provided by Manson et.al.(op.cit) and Powell and Stark (op.cit.) which was based on similar methodologies as that used in this study. This difference may be either because of the different time periods under examination or due to certain methodological drawbacks of these studies.

However, it was found that acquisitions that share certain common characteristics perform better than others. Specifically, acquisitions that were financed by stock perform better than acquisitions that were financed by other means of payment. In fact, cash acquisitions exhibited significant operating performance

deterioration in the post-merger years. There is also evidence that friendly acquisitions outperform hostile ones, and consistent with expectations and with previous evidence, industry relatedness is a determining factor for the success or the failure of an acquisition. Specifically, related acquisitions create value in the post-acquisition years while diversification results in a performance decline.

Acquisitions that were characterised as having a Strategic orientation exhibited an operating performance improvement in the post-acquisition years, in contrast to other types of acquisitions whose operating performance deteriorates following the takeover.

The relative size of an acquisition is also a factor that explains post-merger performance. Large acquisitions perform better than other acquisitions, and large acquisitions that are conducted by relatively large bidders perform better than the control firms both in the pre- and the post-merger periods. When relatively large acquisitions occur between firms that operate in related industries then post-acquisition performance is even higher. Finally, transactions that were closed at a premium lead to a better post-takeover performance than other acquisition.

As far as the market's ability to predict post-merger performance goes there is a positive relationship between the cumulative daily market adjusted combined asset returns at the announcement period and the industry adjusted operating cash flow returns on assets for the 5 post-merger years. This indicates that the stock market can forecast the correct direction of change of the operating performance in the post-acquisition years. The market anticipates improvements in performance from the merger which, however, are realised above a certain level of gains at the announcement. In other words the market behaves optimistically at the event announcement. This is also consistent with the observed relationship between the cumulative daily market adjusted abnormal asset returns at the announcement and the median change in industry adjusted cash flow returns on assets after and before the merger (although this positive relationship is statistically insignificant).

As far as the employment effects of M&As in the U.K. are concerned our evidence suggests that merging firms employ fewer employees than the median industry firm in the years following the acquisition. There is also some evidence that employee costs decline following the merger, however not by a statistically

significant rate. Merging firms that were engaged in stock and cash acquisitions appear to spent less per employee, since in the former employee costs decline but the number of employees remains unchanged while in the latter the number of employees increases but the employment costs do not increase in the post-merger years. As expected, hostile acquisitions are followed by a reduction in the number of employees. However this does not lead to lower labour costs. Acquisitions that occur within the same Level 5 Industrial Sector are followed by a reduction in employee costs but not to lower employee rates. In large acquisitions labour costs increase and the employment rates remain unchanged after controlling for the effects of the above variables. Finally, whether a relatively high premium is paid by the acquirer is not a determining factor that explains post-acquisition employee rates and employment costs. However, after controlling for the effects of the factors that were discussed previously, an increase in employment costs is observed.

CHAPTER 10.

CONCLUSIONS.

10.1. A recap of the M&A problem.

Despite the voluminous literature on M&As in the last decades, we still do not have a definite answer to the question concerning the effects of takeovers on merging firms' performance. Nonetheless, each subsequent merger wave is larger than the previous one both in terms of the number of the transactions and the amount of money that is invested in firms' consolidation.

The economic press frequently hosts extensive analyses of the benefits that a would-be or a pending takeover will deliver to the engaging parties, and 'synergy' is a buzz word among CEOs and investment bankers. The share price of a target firm often soars at the time when a potential acquirer makes a bid while the premiums paid for the purchase of the option of managing a target's resources are often well above its market value. On the other hand, the rate of acquisitions that fail to deliver the promised economic benefits some years after the completion of the deal is increasingly high (Sirower, 1997).

The empirical evidence is inconclusive about whether M&As create value. Share price studies around the date at which a bid is made by a potential acquirer provide a sanguine view about what economic benefits takeovers can deliver to the engaging parties. These studies, on average, indicate that targets' shareholders enjoy substantial abnormal returns while acquirers' shareholders break even in the worst case. Assuming that markets are efficient, this evidence is interpreted as an anticipation of increased future cash flows due to merger; the stock market agents capitalize the increased future cash flows at the time of the merger announcement. However, a large number of studies that focus on the share price of the acquirer for a longer period indicate statistically significant negative abnormal returns in the three or five year period after the merger. Academic controversy here is about the stock market's ability to forecast post-merger performance for a number of years after the

completion of the deal and about the ability of the statistical models that are used to measure 'normal' returns when the share price performance examination extends to a period of several years. By the same token, accounting studies that examine the 'actual' outcome of takeovers provide mixed results about the economic benefits that can be derived from them. Studies that use profitability measures for measuring post-merger performance provide, on average, a pessimistic view about M&As, while studies that focus on the measurement of cash flows indicate, on average, performance improvements. Nevertheless, the view about ex-post performance of merging firms is far from unanimous. A controversial issue, again, is the choice of the benchmark against which ex-post performance is measured.

10.2. Contribution to Knowledge.

This study contributes to knowledge in a number of ways. First, we use a more complete dataset than other studies consisting of 79 acquisitions that were completed between 1st January 1990 and 31st December 1996. Unlike previous studies we augmented data from Datastream with data from Companies House. Second, this study uses a more recent dataset than any other study for the U.K. and so is able to distinguish the effects of mergers between the periods 1990 - 1993 and 1994 - 1996. Third, the examination of the performance of Strategic acquisitions in the U.K. is an additional significant feature of this research which is not accommodated in previous studies. Fourth, unlike previous studies of similar type, this study extends to the examination of the effects of acquisitions where the acquirer paid a relatively high premium for the acquiree versus transactions that were closed at a discount. Fifth, the assessment of the stock market's ability to forecast operating performance is examined using both the methodologies provided by Healy et.al. (1992) and Ghosh (2001) for the U.S., in contrast to previous studies, each using only one of the two methods. Finally, this study contributes to the limited literature on the effects of acquisitions on employment and employee costs in the U.K., using a different methodology than that employed by previous studies. Moreover, unlike previous studies on the effects of M&As on operating performance, this study

provides evidence for both groups of stakeholders (owners and employees) whose private interests are mostly affected by such decisions.

Moreover, previous studies suffer from a number of limitations. First, previous U.K. studies have considered data mainly from the 1980's[1] and with much depleted datasets. That is, samples construction relied only on Datastream where many values are missing. Second, previous studies measure industry adjusted operating performance using the median operating performance of firms that belong to Level 4 Industrial Sectors. But Level 4 Industrial Sectors consist of very few firms in some years (sometimes less than 6). Therefore, the estimation of industry's median operating performance might not reflect merging firms' normal performance in the absence of the takeover. Third, previous studies do not exclude from their samples acquisitions where the acquirer participated in another significant acquisition in the entire examined period before and after the year of merger completion. Such contaminating events would distort results since operating performance changes might not reflect only the effects of the takeover under examination.

In this study we have investigated the effects of acquisitions on cash flows and employment having corrected some of these limitations.

10.3. Outcomes of the Research.

The main finding of this study is that corporate acquisitions, on average, lead to a substantial operating performance decline in the three or five years following the year of merger completion. This finding is unchanged when using either industry firms or matched firms to control for industry and economy-wide factors that may affect operating performance. Although it was found that pre-merger performance does not explain much of the variation in post-merger performance, the performance decline in the post-merger years is clearer when controlling for the effects of pre-merger performance. Assuming that there is no relation between the pre- and the post-merger operating performance, the median change of the benchmarked

[1] We became aware of the paper by Powell and Stark (2005) only several years after the research for this thesis was begun.

operating performance deteriorates in the first three post-acquisition years when it is compared with that of the combined target and bidder in the year prior to the takeover.

The investigation of the post-takeover performance of our sample companies indicated that the average outcome of takeovers in the U.K. in the period under examination did not reflect gains from an exploitation of synergies. The decline of the average corporate performance in the post-merger years implies that there are not many opportunities for performance improvements after the merger, and this is consistent with a view that the U.K. market for corporate control is competitive. Firms appear to operate near their maximum level of efficiency and for this reason there are not many opportunities for a large number of profitable takeovers. Alternatively, our findings may imply that competition in the U.K. market for corporate control is weak and managers are pursuing non-profit maximizing objectives. Another possibility is that competition is weak and managers are pursuing profit maximizing acquisitions as they expect to increase profits, but fail to do so.

However there was a wide dispersion of outcomes concerning post-acquisition corporate operating performance, depending on various merger characteristics. Strategic acquisitions exhibited an average increase in post-merger operating performance, and probably, synergistic or other gains are present in this kind of acquisitions. Stock acquisitions perform better than cash and mixed ones and acquisitions within the same Level 5 Industrial Sectors outperform unrelated acquisitions. Whether this result is due to the exploitation of synergies and cost economies or because of an increase in market power needs further investigation. Consistent with the view of a competitive U.K. market for corporate control, the average operating performance of hostile acquisitions was found to be negative in the post-takeover years. Acquisition size was found to have a positive impact on operating performance and large acquisitions outperform other acquisitions. Large acquisitions between firms with similar operations exhibited an average increase in operating performance after the merger, and finally, it was found that whether the acquirer paid a relatively high premium for the acquiree has no significant effect on post-acquisition performance.

As far as the stock market's ability to forecast future operating performance at the time of the merger announcement, our results indicated that there is a degree of optimism on behalf of the stock market agents when takeovers are announced. However, the relationship between abnormal returns in the period of the event announcement and post-merger operating cash flow returns on assets is positive.

Finally, we found that the number of employees per thousand pounds of sales is below benchmark levels in the post-merger years. Our sample companies exhibited a reduction in labour costs but this cannot be generalized to the population of mergers. Hostile acquisitions are followed by job losses which are not accompanied by lower employee costs. Both stock and cash acquisitions lead to lower costs per employee and in related acquisitions employee costs decrease without a decrease in the number of employees.

10.4. Limitations and further Research.

This study sought to investigate whether M&As lead to operating performance improvements in the post-merger period. However, the results as well as their implications should be viewed in light of the following limitations. First, it should be noted that our sample consists only of public companies from the industrial and service sectors. In the period under examination a large wave of consolidation in the financial sector began which is not examined in this study for reasons explained in Chapter 4. In addition, there is a large number of M&As which took place among companies where at least one of the parties involved was a private firm. It was extremely difficult to find data for such transactions, and therefore, they were excluded from our research. Second, this work did not examine the effects on corporate operating performance of international acquisitions due to time constraints and accounting method disparities across different countries. However, during the 1990's, 5188 overseas transactions were made by U.K. companies with a total value of £265 billion according to Office for National Statistics. Thus, the generalisation of our inferences from this study should be made in the light of these restrictions. Third, the post-takeover period examined in this study is limited to a three or a five year

window depending on the data availability for each acquisition case. Nevertheless, this time period may not seem adequate for the gains resulting from takeovers to crystallise. Thus, it would be interesting to investigate the operating performance of merging firms up to seven or more years after merger completion, especially for the largest deals.

Another issue which calls for further investigation is the causes of the decline in operating cash flows in the post-merger years. Is that a result of managerial inefficiencies during the period of organizational restructuring or, it is a result of the abandonment of the ongoing strategies and the diversion of the orientation of firm towards new investment, marketing, and administrative policies which have been mistakenly projected in the pre-acquisition period?

It would be also important to investigate the effects of cash flow decline on R&D and firms' investment policies. Do merging firms reduce R&D and investment expenditure in the post-merger years when cash flows decrease? And also for those mergers that exhibit an increase in cash flows, is that at the expense of R&D and other investment expenditure? Or, increased cash flows lead to an increase in R&D and other investment expenditure? Therefore, a fertile ground for future research would be the examination of the relationship between the amount of money that merging firms invest in R&D and other investments and cash flows.

The examination of cash flow returns in the years following the acquisitions could also be viewed in relation to the share price behaviour of the combined firm in the same period. However, as discussed in Chapter 3, long term event studies suffer from a number of methodological limitations. Therefore, further research could introduce a panel data analysis to address the issue of the effects of mergers on cash flows and on share price in the post-merger period. One of the findings of this study was that while there is a positive relation between the stock market's reaction at the time of merger announcement and post-merger cash flows, there is a degree of market optimism on behalf of stock market agents at the time of the event announcement. A question arises then as to whether this optimism persists in the years following the merger.

While cash flow returns on assets is a reliable indicator to evaluate firm performance, there are various profitability ratios and sub-ratios which could be

included in the regression equations so as to examine the effects of mergers on firm's profits using alternative definitions for them.

Evidence resulting from this study leaves open the question as to whether this performance decline is a result of the existence of few profitable opportunities in a competitive market for corporate control, or whether weak competition allows managers to pursue other objectives when acquiring companies, or to seek to exploit opportunities for profitable acquisitions but fail to do so. Because performance examination in this study focuses on the combined cash flow returns rather than on those of the two firms separately, it is not identifiable whether targets are profitable in the years prior to the acquisition. This leaves space for further empirical research for investigating what is the targets' performance in the pre-merger years and what are the managerial motives when deciding an acquisition strategy, so as to draw inferences on the above question.

Therefore, conclusive proof for the effects of M&As on corporate performance requires further research after addressing the issue of limitations of this and previous studies

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